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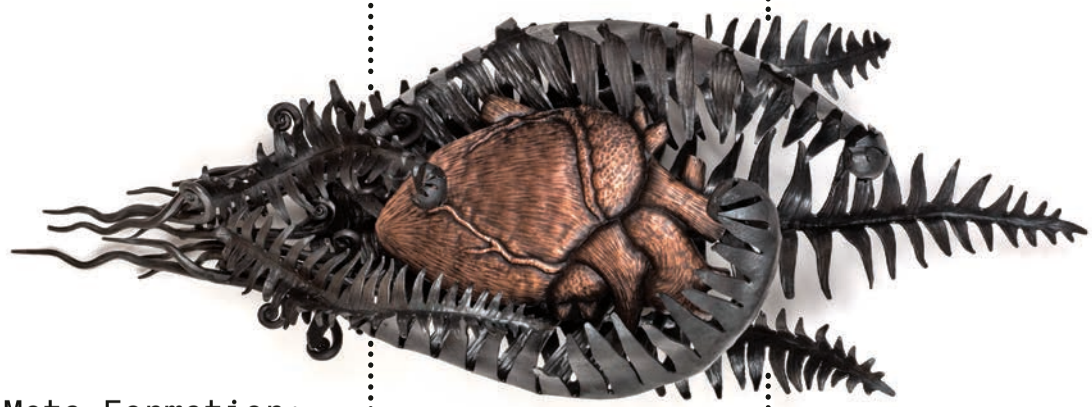

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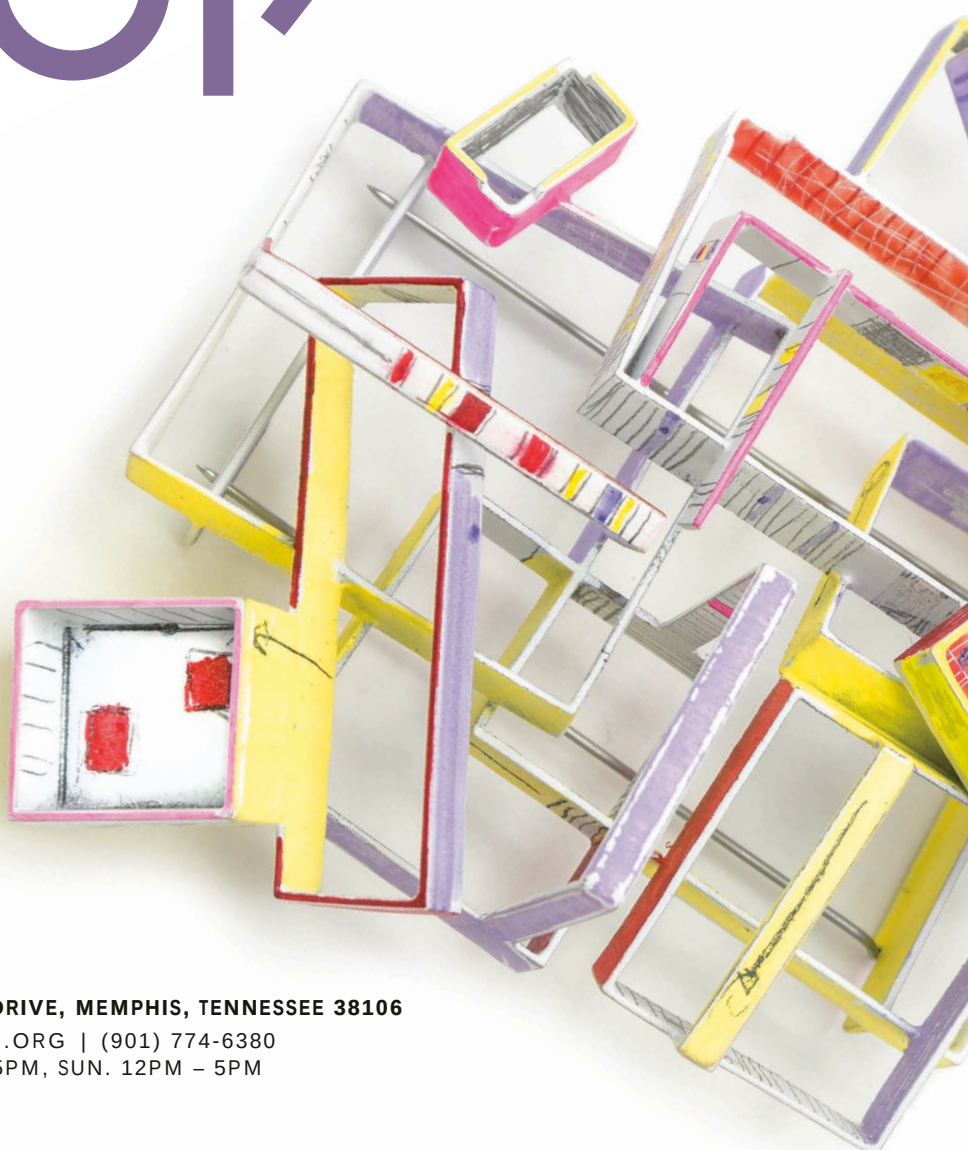

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4 FOREWORD

6 LETTERS TO THE EDITOR

14 FINDINGS
New & Noteworthy
Bella Neyman

16 IN PRODUCTION
Julia Turner
Andrea DiNoto

18 IN THE STUDIO
Georgina Treviño
Kaytie Johnson

20 LOOK
Metalwork at Haystack Mountain School of Crafts
Diana Jocelyn Greenwold and M. Rachel Arauz

24 DOSSIER
Contemporary Jewelry in South Africa
Geraldine Fenn

28 UNDER THE COVERS
Jewelry for Gentlemen
John-Duane Kingsley
Kwab
Emily Culver

FEATURES

32 Meta-Formation: Twenty-first Century Blacksmithing, Activism, and Community
Rachel David is committed to forging an inclusive community for the next generation of blacksmiths. *Rachel David*

40 Mechanical Magic: The Automata of Brittany Cox
A fascinating glimpse into the artistry of antiquarian horologist and 2018 Burke Prize Finalist Brittany Cox. *Samantha DeTillio*

48 An Untried Experiment
The story of how innovation and measured risk propelled the Gorham Manufacturing Company from a small, horse-powered workshop to a state-of-the-art manufactory. *Elizabeth A. Williams*

REVIEWS

56 Jewelry: the Body Transformed
Andrea DiNoto

58 Thomas Gentille: Color Light Air
Bruce Metcalf

VOL. 39 NO. 2

CONTENTS

Cover:
• Lisa Geertsen
Wide Open, 2018
(see p. 37)
• Gorham Manufacturing Company
Whiskey Decanter, 1892 (see p. 55)
• Brittany Cox
Cochlea (Snail), 2018
(see p. 46)

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Metalsmith magazine came into my life at a time when the Internet was still dial-up, the term "social media" had not entered the lexicon, and mailing 35mm slides to calls for entry was common practice. As an undergraduate student at The University of the Arts in Philadelphia, the articles, exhibition announcements, and advertisements that filled the pages of *Metalsmith* truly were my gateway to the field. When I entered graduate school over a decade later, the international metalsmithing and jewelry scene was far more accessible via digital media and social networking platforms. However, *Metalsmith* remained relevant both as a reference and as a reprieve from long hours in the library. I share these personal anecdotes by way of an introduction, and to express my enthusiasm for this publication.

This issue features the variety of content that, to me, encapsulates what makes reading this magazine both thought-provoking and enjoyable. In "Meta-Formation," Rachel David demonstrates the ways in which contemporary blacksmiths are defying stereotypes, and actively working toward an inclusive community for future generations. Highlighting technical virtuosity, Samantha DeTillio's profile of Brittany Cox, a conservation-savvy horologist with a highly specialized skillset, reveals the fascinating philosophical and preservationist concerns of a contemporary practice steeped in historical processes. Gallerist and jewelry artist Geraldine Fenn gives readers an inside view of the challenges and triumphs of South African jewelry artists. Finally, Elizabeth A. Williams's essay, "An Untried Experiment," traces the Gorham Manufacturing Company's rise to international renown through technological innovations and measured risks.

By the time this issue arrives in your inboxes and mailboxes, many of us will be en route to SNAG's annual conference, where I look forward to speaking with you in person. Your critiques are as valuable as your praise, and I invite your feedback, proposals for content, and responses to the content in this issue: editor@snagmetalsmith.org . I look forward to hearing from you.

—Adriane Dalton, Interim Editor

The mission of *Metalsmith* is to explore, analyze, promote, and document excellence and innovation in the field of jewelry and metalsmithing. In achieving this goal, SNAG will produce and oversee the direction and content of a publication that will serve as a significant resource for the metalsmithing field. The editorial content of *Metalsmith* will emphasize contemporary activities, makers, and ideas and incorporate supportive content, relevant critical issues, and the exchange of viewpoints.

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Metalsmith 38.4 / Fall 2018

WISE INVESTMENTS

As I read through *Metalsmith 38.4,* I was struck by a theme threaded throughout: investment. The first mention, in **"Findings,"** was an introduction to the online retailer Menē and its business model of selling jewelry by weight value as a literal investment—jewelry made of fine metals purchased today can literally "pay off" in the future. Unlike in the articles in the rest of the magazine, we never learned an artist's name or inspiration or story. Unlike most studio jewelry, objects purchased through Menē are not investments in artists or art, but in material alone. It's a curious model, although not altogether novel, and made me consider various types of "investment" as I read through the rest of the magazine. In contrast was a brief but powerful mention in **"In the Studio: Chris Shanck,"** which discussed how the artist invests in his immediate community by hiring and promoting the Bangladeshi women of his own Banglatown neighborhood in rapidly gentrifying Detroit. I was moved by two articles that highlighted teachers [**"Renegade Tradition: Nine Decades of Jewelry and Metalwork at the University of Georgia"** and **"Lifetime Achievement Award: Sharon Church"**]. Both told us, and rightly so, about the lasting impact that mentors have on their students: a true, cross-generational investment in those that will come after us. Lastly, two favorable reviews of recent exhibitions [**"Striking Iron"** and **"body of work: Karin Jones"**], speak to the idea of investment and a commitment to bring lesser-heard stories to the forefront. Curators, museums, editors, and other "tastemakers" choose where we invest our energies and influence, including which artists to highlight over others. Making space for African and black artists reminds us that craft is not a zero-sum game; investing in and centering the lived experiences and artistic expressions of diverse craftspeople rightfully moves us towards a future that is richer for all of us. A wise investment indeed.

—Luiza deCamargo, curator

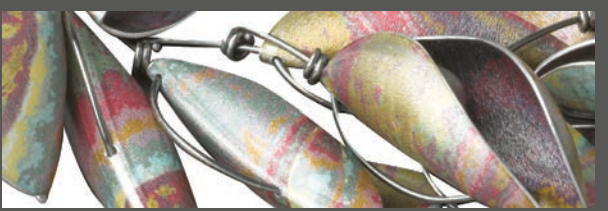
Chris Schank's team at work in his Detroit studio

Courtesy of Friedman Benda and Chris Schanck
Photo:
Michelle and Chris Gerard

Menē's *Amour* ring

Maia Leppo

Maru Almeida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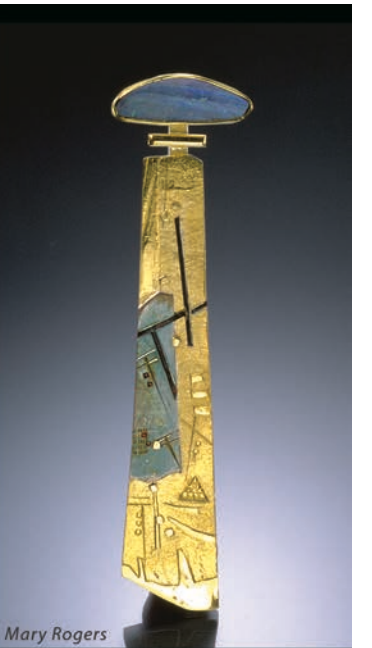

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Mary Hallam Pearse. *Rock On*, 2014. Gold, silver.
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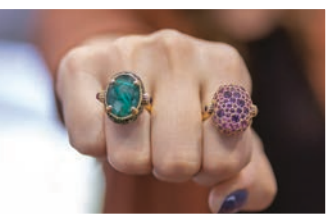
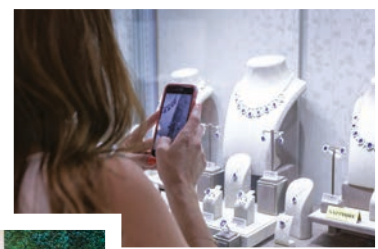

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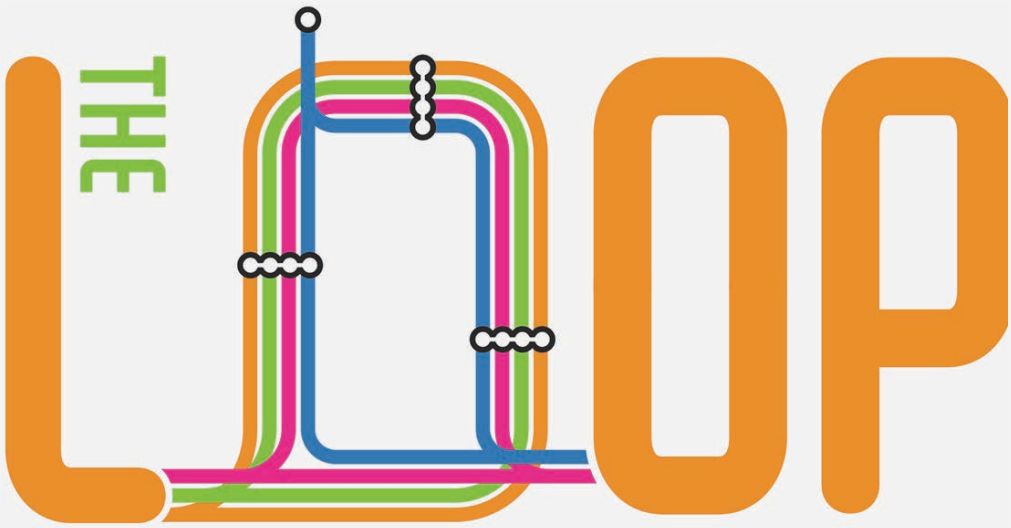

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Namita G. Wiggers is a curator, educator, and writer based in Portland, Oregon. She is the Director of the Master of Arts in Critical and Historical Craft Studies, Warren Wilson College, North Carolina. Wiggers leads Critical Craft Forum. From 2004-14, she served as the Curator (2004-12) and then Director and Chief Curator (2012-14) of Museum of Contemporary Craft, Portland, Oregon.

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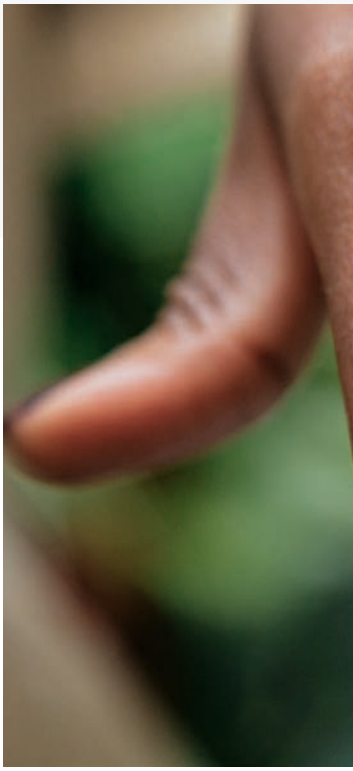


Name Ring

Photo:
Naima Green

#DOCUMENTINGTHENAMEPLATE

In 2015, Isabel Flower and Marcel Rosa-Salas, self-professed "creative soulmates," were working on a podcast for the Brooklyn-based publication *Top Rank Magazine* and settled on nameplate jewelry as their first topic.[1] Little did they know that this theme would become an all-consuming project, consisting of social gatherings, lectures, and eventually a publication. The script for their podcast, which they spent four months developing, made up the bulk of an academic paper, "Say My Name: Nameplate Jewelry and the Politics of Taste," published in *QED: A Journal in GLBTQ Worldmaking* in the fall of 2017.[2] The authors argue that the narrative on nameplate jewelry lost its meaning, depth, and complexity through the removal of "its legacy, cultural history, and political valence"[3] once it entered popular culture, most famously as worn by the character Carrie Bradshaw (Sarah Jessica Parker) on the HBO series *Sex and the City,* which premiered in 1998. The nameplate style necklace even became known as the "Carrie necklace."

The authors' infatuation with nameplate jewelry extends back to Rosa-Salas's upbringing in a predominately Puerto Rican Italian Brooklyn neighborhood. As a teenager, she convinced her mother to purchase one for her. Flower and Rosa-Salas identify the nameplate as a "piece of jewelry—most often a pendant worn as a necklace—in which a sheet of metal is cut with a stencil into the letters that spell out an individual's first name."[4] From their research, Flower and Rosa-Salas conclude that this type of jewelry has existed in the United States since the mid-nineteenth century (one precursor being Victorian-era name brooches), and that there are examples of name jewelry in most cultures and religions. While the styles might be varied, they are mostly united "by the working-class status of the style's early adopters." More importantly, by tracing its roots, wearers of nameplate jewelry have reclaimed the space in which it existed. "On the most personal level, wearing one's name opposes the homogenization and cultural illegibility experienced by immigrants, low-income groups, and communities of color in the United States by making hyper visible the wearer's unique identity,"[5] the authors suggest.

Flower and Rosa-Salas are returning the nameplate to its rightful owners: the "kids in the neighborhood" who inspired *Sex and the City* stylist Patricia Fields. The authors are hosting a massive open call that invites people to share stories about their nameplate jewelry, either in person or via email. They will take these photographs and create a book, "a repository of images," of nameplate jewelry from around the world. They say that it is an egalitarian process, and that "anyone who shows up is in." If you are interested in participating or sending in your photos, contact guccibuckethat@gmail.com or follow #documentingthenameplate.

Double-plated name necklace

Photo:
Isabel Flower

WILL JEWELERS AND METALSMITHS FALL PREY TO ADDITIONAL TARIFFS IN THE US-CHINA TRADE WAR?

While many social policies put forth by the Trump administration have sparked debates, one issue seems pretty clear: the President's tariffs are likely to have an impact on jewelers and metalsmiths. As an Office of the United States Trade Representative

(USTR) press release stated: "In March 2018, the USTR released the findings of its exhaustive Section 301 investigation that found China's acts, policies and practices related to technology transfer, intellectual property and innovation are unreasonable and discriminatory and burden or restrict U.S. commerce."[6] Since then, the administration has imposed three rounds of tariff increases on items being imported into the United States. While the initial tariffs were not on common household goods, the most recent wave directly impacted decorative items and accessories. This change could hinder the economic development of small and mid-size businesses that manufacture their goods and purchase materials in China.

On July 10, 2018, the USTR announced a 10 percent hike on tariffs on products from China that have an annual trade value of $200 billion, with various raw materials and accessories used in the jewelry trade listed in Trump's tariff proposal.[7] In the Tariff List released on September 17, 2018, the USTR listed rough "miners" diamonds, unworked, sawn, cleaved or bruted; industrial diamonds; diamond dust and powder, glass beads, pearls, and imitation stones; gold or silver articles, including metal clad with gold or silver, and articles of precious metal other than gold or silver. Also on the list were popular packaging items like wooden jewelry boxes. Thus far, jewelry manufactured in China has not been taxed, but new tariff hikes can be announced any time.

Karen Giberson is president of the Accessories Council, a nonprofit international trade organization, and has been fighting the tariff increases, including testifying at a public hearing in front of Congress in August 2018. She advises jewelers to "diversify their supply chain by educating yourself on other options, work with your manufacturers, examine your cost structure, and think about pricing and margins now so that you can be prepared for any new hikes" that may come down the line. Giberson also says that for an industry that is used to being tariffed (in fact, accessories and jewelry has always been one of the highest tariffed categories), we "need to start thinking creatively."[8] She also advises writing letters to your local congressperson.

No other categories have been added to the Tariff List since September; likewise, not much additional progress has been made on behalf of Congress in resolving this issue. With the federal government shutdown in winter 2019, negotiations on US-China relations were placed on hold. One bright spot? In the November 2018 midterm elections, fifteen candidates supported by the Jewelers of America Political Action Committee (JAPAC)—the only PAC that represents the fine jewelry industry in Washington, D.C.—won elections to the House and Senate.[9]

1 https://soundcloud.com/toprankmagazine/episode-01-the-personal-is-political / **2** Isabel Flower and Marcel Rosa-Salas, "Say My Name: Nameplate Jewelry and the Politics of Taste," *QED: A Journal in GLBTQ Worldmaking* Vol. 4, No. 3 (Fall 2017): 109-126 / **3** Flower and Rosa-Salas, "Say My Name," 111. / **4** Flower and Rosa-Salas, "Say My Name," 117. / **5** Flower and Rosa-Salas, "Say My Name," 117. / **6** https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/september/ustr-finalizes-tariffs-200 / **7** https://www.diamonds.net/News/NewsItem.aspx?ArticleID=62544&ArticleTitle=US-China+Trade+War+May+Hit+Jewelry+Industry / **8** Karen Giberson, personal interview, October 10, 2018 / **9** https://www.jewelers.org/ja/advocacy/resources/advocacy-news/113-legislative-agenda/886-legislative-update-midterm-election-results

JULIA TURNER: A PERFECT PLACE TO CONNECT

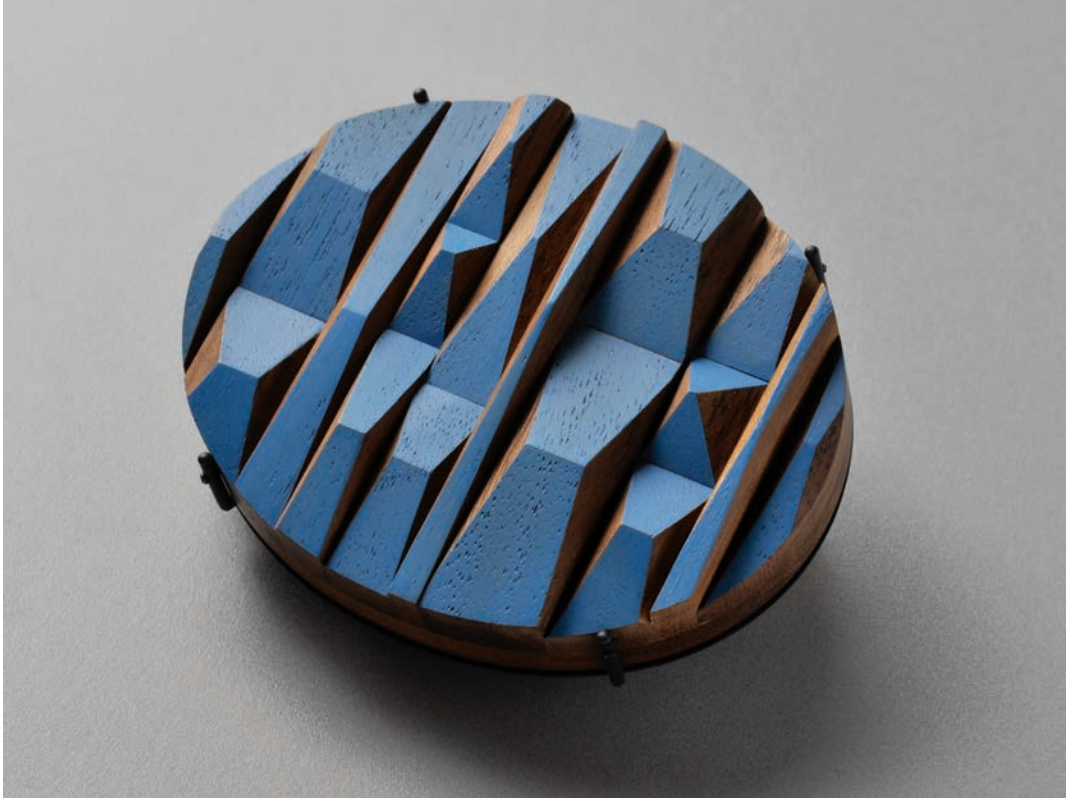
BY ANDREA DINOTO

"AN EPIC OCCURRENCE that changed the trajectory of my creative life." That is how Julia Turner describes her serendipitous connection to Heath Ceramics, California's venerable producer of midcentury modernist tiles and dinnerware. Quite by chance, six years ago the San Francisco-based jeweler was looking for new studio space in which to locate her sculptural wood and enamel jewelry business when a friend sent her an email "out of the blue." It was addressed both to Turner and Heath's co-owner Catherine Bailey, asking if the company had studio space available. "Yes," Bailey answered, "a beautiful space." Turner moved in. Located in Heath's San Francisco Tile Factory, Turner's space is part of the Heath Collective, studios made available to artisans whom Heath's owners (Bailey and her husband, industrial designer Robin Petravic) feel share the company's stated philosophy: "timeless design and uncompromising integrity." The Collective's studio occupants draw on multiple disciplines, including, says Turner, "weaving, textile, letterpress, and leatherwork," and each collaborates with Heath on design projects from time to time. For Turner's part, she creates, in addition to her own work, small jewelry collections twice a year using Heath's changing seasonal (summer/winter) color palettes. In a unique instance, she collaborated with Heath's clay studio director, Tung Chiang, on a series of wind bells that combined Chiang's hand-thrown ceramic pieces with clappers made by Turner in metal and wood. The clappers descend from the domed bells, in Turner's words, "like giant earrings in oxidized brass and hardwood, with hand-carved and painted sails." (Chez Panisse, the Berkeley restaurant founded by Alice Waters, and the textile company Alabama Chanin have both lent their names to Heath dinnerware lines as well.)

Julia Turner
Hive Necklace (Marigold)
steel, vitreous enamel, oxidized sterling silver chain
1 × 1 5/8 in. on 18 in. chain

In 2018 Heath celebrated its seventieth anniversary. When Bailey and Petravic bought the company in 2003, the business had been in decline for several years, but its design ethic had remained strong and viable, inspiring the couple to "take the old and move it forward." Founded in 1948 by Edith and Brian Heath as a small ceramics business producing handmade goods for the home, the company featured wares that were, and still are, notable for clean lines and vivid colors. In the early twentieth century, Heath enthusiasts included architects Eero Saarinen and Frank Lloyd Wright, both of whom found the company's unadorned elegance congenial with their built interiors. Not surprisingly, Turner's architecturally inspired designs found a perfect home within Heath's creative campus. Her one-of-a-kind brooches and pendants carved from wood can suggest urban structures; production work includes enameled pendants and earrings in both brilliant and subtle colors that carry subdued patterns on simple modernist forms. Turner's rope necklaces, made of Japanese glass Delica beads strung on steel cable with sterling silver clasps, demonstrate how she deftly combines industrial materials with more refined elements. Wood is a favorite material, which she uses for both form and color. "Maple, a hard wood, is good for absorbing bright, vibrant, durable colors," she says, "while walnut, which can be oxidized or ebonized, I use for warmth."

For Heath, says Turner, the idea of renting out studio space is both an income generator and a platform for bringing in like-minded makers who share the company's aesthetic alignment. "It feels like a family," she says, "in which we all work independently while receiving the



Julia Turner
Timber Brooch #2 (Blue Peaks)
walnut, stain, steel
2 3/4 × 2 1/4 × 1/2 in.

benefits derived from being included in the company's online shop and retail stores [there are four in California]. It's a dream to work with them," she says, "as they handle purchasing and there's never a glitch, so it's almost like a salary." With Heath as a support system, Turner now finds it easier to do financial planning: "My relationship to the work is secure and safe, while everything else is a bit more random." Turner estimates that about twenty percent of her income is derived from sales through her own website, while trunk shows at Heath and other venues, design fairs, and galleries contribute the rest. Of craft fairs, she says, "they don't do a lot" income-wise, and in some cases it makes more sense to stay home and go the wholesale route. In 2018, Turner participated in the Smithsonian Craft Show, the Philadelphia Museum of Art Craft Show, and San Francisco's American Craft Show, located conveniently "up the street," says Turner, "where I'm able to gather my connections all in one place."

With the Internet, says Turner, people now have access to artists without the big shows, so of course, social media figures into her marketing strategies. "Facebook has never felt good to me," she says. "I love speaking through images." For that, Instagram is the obvious choice. "It's a way to see what people are doing who are far away," she says, and to develop a following. To ensure her posts were effective, Turner hired a social media coach, who would report in every two weeks with analytics on where she was getting the most response. As a result, she has sold well through the platform. "When I did a show in Ohio, I did a lot of Instagram posts," she says, "and sold two pieces."

At Heath's second annual Make Good Market, held last December at the Tile Factory, Turner, along with several of her Heath studiomates, were among thirty different local designers selling their handmade wares to holiday shoppers. "I hit a record for sales in one day," she says happily, "most for production work, but, because collectors showed up, one-of-a-kind pieces as well. In San Francisco," she says, "there's a real inclination to shop local. We're all so connected."

http://www.juliaturner.com

Andrea DiNoto writes on art, craft, and design.

Julia Turner at Heath's second annual Make Good Market

GEORGINA TREVIÑO: LESS IS A BORE

BY KAYTIE JOHNSON

Georgina Treviño in her studio.

Photo: Carlito Galvan

WHEN I VISIT GEORGINA TREVIÑO in her light-filled studio in San Diego's Little Italy neighborhood, she's just returned from a day trip to Tijuana, Mexico, her childhood home. Tijuana is her perpetual creative muse, and she visits often to recharge, source materials, eat tacos, and soak up inspiration. Treviño's energy is palpable and contagious.

Treviño honed her technical skills while studying jewelry and metalsmithing at San Diego State University, but, like many artists, believes her creative voice was developed through learning experiences that took place outside of the classroom. In 2010 she took a break from her studies to spend a year in Mexico City, where she lived with her uncle, renowned architect Mauricio Rocha Iturbide, and his wife, curator Estela Treviño. While there, Treviño immersed herself in the city's vibrant cultural scene, frequently attended architecture lectures, and began creating jewelry with a strong architectural sensibility, a design characteristic that persists in her work to this day.

Another creative breakthrough occurred in the summer of 2014, just after Treviño completed her studies at San Diego State, where she earned a Bachelor of Arts degree in Applied Arts. She applied for and received work-study scholarships to several U.S. craft schools, including Haystack Mountain School of Crafts in Maine. There she enrolled in a cement workshop taught by Jim Cotter, a jewelry artist known for his pioneering use of nontraditional materials. The workshop was a game-changing experience for Treviño, as it was the first time she had the opportunity to experiment with unconventional materials and new fabrication techniques. As she recalled in an email exchange: "I was so surprised with the process and was making tons of work nonstop—messing things up, adding color, making molds, and just having fun with it."

The pieces Treviño created during Cotter's workshop were inspired by the architecture that surrounded her during her childhood in Tijuana: perpetually unfinished buildings constructed from the modest resources of concrete and steel rebar. This early body of work was minimal and understated in both form and color, and combined prosaic materials like cotton twine, rope, steel, and brass with organic forms made from cement cast in condoms and plastic coffee-creamer containers. Treviño's fearless mashups of high and low are a form of bricolage that has become one of her signatures; she is known for mixing the quotidian and the precious. In her skilled hands, plastic crazy straws and hair combs from dollar stores are paired with sterling silver, millennial pink plastic canvas sourced from craft stores meets 24 karat gold.

After completing her summer workshops, Treviño felt creatively invigorated and, believing that she "had nothing to lose," submitted the work she created at Haystack as part of her application to participate in Schmuck, the prestigious Munich-based exhibition that showcases the best and most innovative in contemporary jewelry design. To her delight and surprise, she was one of the few American designers accepted to the

show's 2015 edition. The import of this early professional triumph was not lost on Treviño. "Getting accepted to Schmuck proved to me that if you really want something, and really dedicate the time it takes to accomplish something you want, it can happen."

Never one to rest on her laurels, and perpetually in search of ways to broaden her knowledge and skills, Treviño enrolled in an enameling class with British jeweler Elizabeth Turrell at Penland School of Crafts in North Carolina in 2016. Through Turrell's instruction, Treviño learned enameling processes that emphasized spontaneous and fluid forms of markmaking through unfired enamel using the technique of sgraffito, photo transfer, or simply applying liquid enamels to the metal. Akin to the elemental process of drawing, these new working methods allowed Treviño to incorporate more nuanced patterning and surface tactility into her work through color, line, and visual texture.

Treviño has since established a successful and wildly popular line of jewelry comprised of playful, boldly colored pieces with a strong graphic sensibility that she tirelessly promotes on her visually addictive and widely followed Instagram feed. Her distinctive work is strongly editorial and highly sought after for photo shoots by an international roster of fashion magazines, including *Vogue México, Marie Claire México, Glamour México,* and *Bazaar México,* among others.

Spread featuring work by Treviño in *DNA Magazine*, Issue 2, September 2016.

Photos: Juan HDZ

Treviño had a busy 2018. In February she partnered with Mexican menswear designer Barbara Sànchez-Kane to create erotically charged jewelry and accessories for the designer's "Artesanal Sex Shop" collection. In September, several of Treviño's pieces were featured in *Love Jewels,* a group exhibition that took place at Multiple, a contemporary jewelry gallery in Hasselt, Belgium. The works chosen by the show's organizers, Smitten Collective, included an irreverent rosary made from polymer clay beads embellished with bite marks and smiley faces, and finished with a silicone fetish whip, and cherry-red powdercoated earrings in the form of an erect and flaccid penis. Her work was also included in two exhibitions during the first iteration of New York Jewelry Week in November 2018. She has no plans to slow down in 2019.

What's next for this supernova designer? "I'd like to keep growing my jewelry business and, as an artist, expand to different mediums, including furniture and clothing design. Also, I want to open a space on the West Coast dedicated to supporting emerging contemporary jewelers by creating a space where they can create and exhibit their work." Treviño's collaborative nature, generosity, boundless energy, and entrepreneurial spirit are at the heart of her practice as an artist and designer, and at the forefront of everything she does. A big believer in paying it forward, she offers these words of wisdom for up-and-coming designers: never stop learning; be involved in your community; collaborate; make rejection a motivation; fake it until you make it; and celebrate everything. Sage advice, indeed.

Kaytie Johnson is a curator and writer based in San Diego.

Georgina Treviño
"Holy Whip" Rosario (Holy Whip Rosary), 2018
polymer clay beads, plastic balls and silicone sex whip
32 × 4 × 1 in.
Courtesy of the artist
Photo: Georgina Treviño

IN THE VANGUARD: METALWORK AT HAYSTACK MOUNTAIN SCHOOL OF CRAFTS, 1950–1969

BY DIANA JOCELYN GREENWOLD & M. RACHAEL ARAUZ

Robert Ebendorf
Cast Rock Brooches, 1969
Bronze, silver, copper
2 3/4 × 2 1/8 × 1/8 in. each
Porter-Price collection

Ebendorf created these cast brooches in silver and bronze using wax molds of the rocks around campus.

HAYSTACK MOUNTAIN SCHOOL OF CRAFTS, founded in 1950 in Liberty, Maine, and located in Deer Isle, Maine, since 1961, grew from modest roots to become one of the country's leading institutions for communal, process-based craft learning. Though geographically remote, Haystack exerted an outsized influence on American art at midcentury. The new exhibition *In the Vanguard: Haystack Mountain School of Crafts, 1950–1969* traces Haystack's first two decades through groundbreaking and experimental works inspired by time at the school.

Since Haystack's earliest years, artists experimented with metal and jewelry. Founding instructor Edgar Sewell first offered "incidental forge work" in 1951, and Norwegian artist Sigurd Erickson taught enameling in 1955. In 1964, director Francis Merritt expanded the program with workshops in jewelry and metals led by Timothy Lloyd and Thomas Gentille. Gentille first came to Haystack in the late 1950s, and dedicated his book *Step-by-Step Jewelry* to Merritt and Haystack's patron Mary Beasom Bishop. Haystack embraced a wide range of styles and techniques, from the pared-down, Scandinavian-influenced designs of Olaf Skoogfors and Heikki Seppa to found-object experiments by J. Fred Woell and Robert Ebendorf. Ebendorf ate lobster for the first time at Haystack, and began integrating the claw form into his designs. Metalsmiths such as Miyé Matsukata, Merry Renk, and Arline Fisch also found a welcome home in the Haystack studios, where they created works inspired by the landscape.

In the Vanguard is on view at the Portland Museum of Art, Maine, from May 24 to September 8, and at the Cranbrook Art Museum in Bloomfield Hills, Michigan, from November 18 through March 8, 2020. The accompanying publication is available through University of California Press.

Diana Jocelyn Greenwold, PhD is the Associate Curator of American Art at the Portland Museum of Art. M. Rachael Arauz, PhD is an independent curator working in Massachusetts. They co-curated the exhibition.

Arline Fisch
Portable Shrine, 1968
sterling silver and Egyptian mummy beads
3 1/4 × 2 3/4 × 1 1/4 in.
Bringle Collection

Thomas Gentille
Brooch, 20th century
gold and opal
1 1/8 × 2 1/8 × 3/8 in.
Collection of Steve "Spider" Merritt

Haystack director Fran Merritt acquired this pin by Haystack student and instructor Gentille for his wife Priscilla.

J. Fred Woell
November 22, 1963, 12:30 p.m., 1967
copper, silver, brass, gold leaf, photo, and wood
6 1/4 × 5 × 7/8 in.
1991.57.1; Smithsonian American Art Museum; Gift of Rose Mary Wadman

Robert Ebendorf
Haystack Kaleidoscope, 1969
mixed media
6 1/8 × 2 × 2 in.
Porter-Price collection

Miye Matsukata
Pair of Earrings, 1965–1975
gold and ebony
2 1/2 × 1 in.
2003.312.1-2; Museum of Fine Arts, Boston; Gift of the grandchildren of Irma Sims Rubenstein

LOOK

Merry Renk
"White Cloud" Wedding Crown, 1968
formed and pounded 14 karat yellow gold sheet, wire, cultured pearls
3 × 6 1/4 × 6 1/4 in.
1977.2.73; Museum of Arts and Design, New York; Gift of the Johnson Wax Company,through the American Craft Council, 1977

Arline Fisch
Large Collar, 1966
fine silver, silk, rayon, Saran Wrap
36 × 9 in.
Collection of Harry Goldscholl

Fisch first came to Haystack in 1959. She returned in 1966, when she began this necklace inspired by the mosses that blanket the region.

Timothy Lloyd
Casserole, 1965
raised fabricated sterling silver
4 × 7 1/2 in.
Collection of Susan and Timothy Lloyd

Olaf Skoogfors
Dimsdale Machine Pin, 1969
gold-plated sterling silver, moonstone
2 × 2 1/4 in.
Collection of Matthew J. W. Drutt, NY

LAY OF THE LAND: CONTEMPORARY JEWELRY IN A CHANGING SOUTH AFRICA

BY GERALDINE FENN

Thatho Radebe
Ring, 2014
silver, copper
50 × 45 × 45 mm
Tinsel Gallery Collection
Courtesy of Tinsel Gallery
Photo: Sarah de Pina

IT CAN BE LONELY down here on the southern tip of Africa—from a contemporary jewelry point of view, anyway. In my twenty years making, exhibiting, and selling jewelry in this country, it has mostly felt like an uphill battle.[1] We are still encumbered with the legacy of our history. Under the apartheid government of South Africa the country was very insular and conservative, creating a big divide between fine art (practiced by white urban people with a European education) and craft (seen as traditional and practiced by black rural people). Since the 1990s, many visual artists have been trying to address this separation. There are now many older-generation black artists, who never received a formal arts education, whose work is highly regarded and represented in the collections of our national galleries.[2]

In addition to the many other social and cultural divides created by the apartheid government, this art/craft separation is something that we are still trying to overcome. While we now have a valued, vibrant, and inclusive contemporary art scene, contemporary craft and design are not given nearly as much respect and support. Pockets of government support exist for traditional crafts, with funding for skills development programs and marketing of goods at local and international exhibitions and trade shows, but there is no longer a Crafts Council representing professional crafters.[3] Most of the promotion of craft, certainly the work on the avant-garde end of the spectrum, is done by a few private galleries.[4] Our current democratic government is doing less and less to support the arts; funding for art and design education and projects by the private sector has diminished as a result of our decade-long recession.

Contemporary jewelry design in particular seems to fall through the cracks. This oversight is compounded by the fact that there are still very few contemporary jewelers who are non-white (and non-male), for various reasons; this art is perhaps seen as a very Eurocentric, even colonial, pursuit.[5] There are few local traditions of metalwork in jewelry, apart from the mining, working, and trading of gold during the Kingdom of Mapungubwe (1075–1220), so South Africa's present jewelry industry was established initially by Dutch and English colonists. It continued to grow via an influx of Jewish, German, and Swiss goldsmiths, diamond cutters, and clockmakers from Europe after World War II. The jewelry department at Stellenbosch University, the oldest and most influential department for contemporary work, was set up in 1968 by Ronald Christensen, a German master goldsmith, and was strongly influenced by the principles of the Bauhaus.[6]

Songezo Baleni
Indandatho (The Ring), 2011
smoky quartz and handwoven sterling silver
26 × 20 × 15 mm
Photo: Songezo Baleni

While there are many government programs that sponsor a practical jewelry education for black students, their main concern is getting people into jobs at the bench (rather than cultivating jewelers who start their own businesses). These

Geraldine Fenn
Kitsch Fantasy Brooch, 2018
silver, 9 karat gold, reconstituted coral, amethyst, citrine, tanzanite, cultured pearl
80 × 100 × 15 mm
Private collection
Courtesy of SA Contemporary Jewellery Awards
Photo: Sarah de Pina

schools are set up with generous funding, but often no long-term oversight or financial support, which means they face continuous challenges with maintaining equipment and getting qualified and passionate teachers involved. Training in design is often lacking, so graduates of these programs very rarely, if ever, become contemporary jewelers. In order to address this lack, the Thuthuka Jewelry Development Program was set up a decade ago by Carola Ross; it is an annual competition focused on these jewelry schools, where students go through a mentorship process to produce their designs.[7]

In order to grow a bigger audience and get the attention it deserves, both locally and internationally, contemporary jewelry in South Africa needs both to be more representative of the country and to work harder at making jewelry more visible to the general public. And while there are challenges, many of which are certainly not uniquely South African, there is also much to be excited about. Talented young jewelers are increasingly bringing traditional craft techniques from their own cultural backgrounds into their work, forging new and vibrant paths. Songezo Baleni from the Durban University of Technology and Thatho Radebe from the University of Johannesburg both use Zulu weaving techniques in metal; happily for the field as a whole, they both teach at their respective departments, so they will have some influence over successive generations of students.

There is a move by jewelry design students to explore personal heritage as a starting point, rather than looking to Western cultural references and archetypes. In a country that has eleven official languages, engaging with cultural heritage is a productive seam for a designer to mine, and there are at last some design heroes for young students to look up to. Textile designer Laduma Ngxokolo, for example, has garnered international acclaim for his vibrant knitwear range MaXhosa, inspired by beadwork from his own traditional Xhosa background. The Ninevites, founded by Nkuli Mlangeni, use the distinctive bold patterning of traditional Ndebele designs as the basis for their handwoven rugs. This recognition of our local crafting traditions is important if there is to be any substantive change in the way jewelry design is taught. A "decolonization" of higher education will be most effective if institutions start looking to the precolonial traditions of craft in Africa and incorporate them into their syllabi alongside the European goldsmithing techniques and design methodologies. Progressive educators like Chris de Beer from the Durban University of Technology, for example, are bringing in local crafters to teach Zulu beadwork to the students, and encouraging them to value their backgrounds as a source of design inspiration. It is now up to a new generation of teachers, like Baleni and Radebe, to reinforce this important shift in thinking.

There are other encouraging developments: In 2017, the University of Johannesburg jewelry department, headed by Farieda Nazier, created the Contemporary Jewelry Forum, a one-day conference that included a range of speakers.[8] It also established the South African Contemporary Jewelry Awards, the country's first jewelry competition that is purely about contemporary design.[9] There was much excitement when the Jewelry Awards were announced late last year by Eugene Hön, acclaimed ceramist and director of the gallery attached to the University of Johannesburg's Faculty of Art and Design (FADA). The judging panel was made up exclusively of local contemporary designers (Eugene himself; Carine Terreblanche, head of the jewelry department at Stellenbosch University; and me) and international panelists (British designer and teacher Lin Cheung and Johan van Aswegen from the Rhode Island School of Design).

Eugene Hön
Necklace and Bowl
2018
original drawings transfer-printed on bone china, steel, silver
Private collection
Courtesy of SA Contemporary Jewellery Awards
Photo: Sarah de Pina

Joani Groenewald
Hopelessly Hopeful - three-part series, 2018
brass, glass, copper, vitreous enamel,plastic, cotton cord
50 × 65 × 25 mm (excluding cord)
Private collection
Courtesy of SA Contemporary Jewellery Awards
Photo: Sarah de Pina

Mariambibi Khan
Interlacing Identities
fine and sterling silver, gold-plating
Private collection
Courtesy of SA Contemporary Jewellery Awards
Photo: Sarah de Pina

Forty-eight pieces from twenty-five artists were selected for the exhibition held in March 2018.

The work on display provided a snapshot of the field in the country as a whole: themes explored were universal ones of personal identity, craft, gender, an exploration of historical forms, geometry, and nature. The materials used showed a playfulness and experimental approach that has become a feature of South African design; there was everything from traditional gold, silver, gemstones, and enamel to glass, local Shweshwe printed and dyed cotton fabric, folded paper, carved wood, plastic from old milk bottles, porcelain casts of thorn-tree branches, and bits of circuit boards. It can be difficult to pin down what it is that makes South African design uniquely South African; we have myriad cultural backgrounds and influences. But attention to texture was a unifying thread, perhaps as a result of early exposure to the rich textures of woven, carved, and beaded objects that are ubiquitous here. The power of specificity to the South African experience in new work was echoed in the opening statement by Beverley Price, one of our best-known and most conceptual art jewelers, who spoke thoughtfully and with insight about all of the artists represented in the show. Her own work is often highly charged politically, as she explores the history of gold mining in the country, with its attendant issues of mineral rights and the treatment of miners, as well as the previously suppressed history of the precolonial gold mining that occurred at Mapungubwe 600 years before European settlers arrived here. Works by winner Joani Groenewald and award recipients Mariam Bibi Khan and Nora Kovats proved that despite the various challenges facing the field, we have much to be optimistic about, and a lot of young talent that needs to be nurtured.

The second edition of the awards was announced by Hön at the second conference of the Contemporary Jewelry Forum in September 2018 at the University of Johannesburg (UJ). The forum featured conversations with the Australian curator and scholar Dr. Kevin Murray and a workshop on Urgent Jewelry facilitated by Beverley Price, where found objects and unusual materials were shared and transformed into jewelry in a matter of hours and then displayed in an impromptu exhibition at Tinsel Gallery. Since few opportunities to leave the isolation of our studios exist, this kind of gathering is really important if we want to maintain the community of contemporary jewelers that has been created and sustain its momentum. The conference closed with an essential conversation about how South African contemporary jewelers can be best supported moving forward. Khanya Mthethwa and Thatho Radebe, both makers, graduate

Opposite:
Nora Kovats
Poeletjie, 2017
silver, vitreous enamel
on copper, citrine,
amethyst, steel pin
60 × 55 × 30 mm
Private collection
Courtesy of SA Contemporary
Jewellery Awards
Photo: Sarah de Pina

students, and lecturers at the UJ department, proposed a Jewelry Week, during which several exhibitions and events could be packed into a few days to generate a bit more media traction and public interest: that's exactly the kind of energy we need to keep moving things forward. In order for the Contemporary Jewelry Forum and awards to have any kind of longevity, they need to have buy-in from this younger, more diverse generation of makers, and leadership that celebrates the multivalent nature of the design landscape here today.

Perhaps we should adopt, as suggested by Murray, a term like *umswenko* to govern our work moving forward. This word from township vernacular derives from the English word *swank* and Zulu *uswenka* (well-dressed), and denotes a vibrant cross-cultural expression of youth identity through personal adornment.

By embracing this uniquely South African postmodern and postcolonial spirit, we can nurture a younger audience, encouraging them to see more value in locally designed and produced jewelry. Considering that eighty percent of jewelry purchased in South Africa is now imported, the contemporary jewelry sector potentially has a vitally important role to play within the broader commercial industry: to get people excited about local design so that they start supporting local makers once again. With the momentum provided recently by the Forum and Awards, and more of a sense of engagement from members of our little community than ever before, this *umswenko* future could be very bright indeed.

Geraldine Fenn is a jeweler and the owner of Tinsel Gallery in Johannesburg, South Africa.

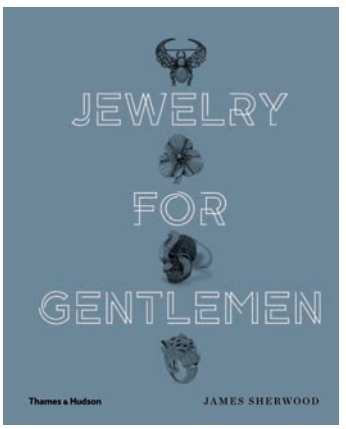
Khanya Mthethwa
Intokazi, 2014
fine silver, glass
beads, rubber
160 × 200 × 15 mm
Private collection
Courtesy of
University of
Johannesburg

1 I say this from experience. In 2006 I opened my shop, Tinsel, to give local contemporary jewelers a platform to show and sell their work. It has evolved quite a bit since then, and is now more of a gallery space with a carefully curated selection of work. My husband Eric Loubser and mother-in-law Liz Loubser (both contemporary jewelers as well) are now partners in the business. / **2** These include sculptors like Jackson Hlungwane and Johannes Segogela, and painters like Dr. Esther Mahlangu. / **3** The Crafts Council was closed recently after a long period of mismanagement and is now subsumed under the National Arts Council. / **4** The only galleries devoted exclusively to contemporary jewelry are my gallery (Tinsel) and Veronica Anderson Jewelry, both in Johannesburg; Kim Sacks Gallery, also in Johannesburg, specializes in contemporary ceramics as well as traditional craft; Southern Guild in Cape Town promotes contemporary design, mainly furniture; Africa Nova, also in Cape Town, has a mix of contemporary and traditional craft; and KZNSA in Durban combines fine art and contemporary craft. / **5** This is a conversation in education writ large, as higher learning in South Africa has been through somewhat of a crisis in the last few years, with louder and louder calls from students to "decolonize" the curricula. / **6** The two successive heads of the department at Stellenbosch until 1994, Eberhardt Dechow and Dieter Dill, were also brought from Germany. Since most of the current heads of department at the country's other teaching institutions trained in this department, there is a very strong Eurocentrism in jewelry education here. Added to that is the fact that often white graduates have access to financial support from their families to start their own studios, whereas black graduates generally don't, so they end up working in the more commercial sector. / **7** Sadly, the future of the program is uncertain, since government funding for it has dried up and the broader commercial industry, which has helped out with funding in the last few years, is very much feeling the pinch of a sluggish economy and will be less likely to contribute in the future. / **8** We are currently working on taking the Forum further, and have decided to rename it the African Contemporary Jewelry Association. It is headed by Farieda Nazier, with Eugene Hön and me heavily involved, and input from various people around the country (Beverley Price; Angela Yeung; Sam Vincent and Nicky Savage from Durban University of Technology; Nina Newman from Tshwane University of Technology; Carine Terreblanche and Joani Groenewald from Stellenbosch University; Khanya Mthethwa and Karleigh Swanepoel from University of Johannesburg; Safia Salaam from Ruth Prowse School of Art). / **9** In the past, there were three big jewelry design competitions, sponsored by the three largest mining houses: De Beers, Anglogold Ashanti, and Angloplat. They have been problematic for several reasons: the pieces have to be made from diamonds, gold, and platinum respectively (supplied by those companies), and the judges are generally people from the marketing departments of those companies who know very little about design, along with some jewelers from the traditional fine jewelry industry. This is not to say that there haven't been some very impressive pieces in those shows, but their focus has not been on contemporary or studio jewelry as we understand it.

DANDY REDUX

BY JOHN-DUANE KINGSLEY

FOR JAMES SHERWOOD, an arbiter of style for Royal Ascot and editor of *The Rake,* a menswear magazine and website that purports to be the "modern voice of classic elegance," the mantle of dandy is a natural—and well-tailored—fit.[1] Readers approaching Sherwood's new book *Jewelry for Gentlemen* expecting the elegant refinement that the term "gentlemen" implies will have their expectations exceeded. The text is designed to highlight the majesty of jewelry; deliciously staged photographs juxtapose pieces against suits by the Savile Row tailors Henry Poole & Co., rhapsodic prose, and auction prices that underscore the precious nature of featured pieces. Within this packaging, Sherwood presents an archetype of the twenty-first-century British gentleman as an emblem of elegant restraint that is both reliant on a strictly western sartorial style and subtly plays with—and ultimately upholds—prescribed gender roles. This archetype of gentlemanly taste is grounded in examples of contemporary and historic tastemakers. An admitted devotee of the original dandy Beau Brummell and his sartorial descendant, the former King Edward VIII, Duke of Windsor, Sherwood's selections focus on the subtle impact of finely crafted accessories on bespoke clothing.[2] A key example is Sir Phillip Sassoon, a noted politician and aesthete whose staple accessory was a simple pearl-topped stickpin, which affixed his cravat to an impeccably starched shirt front. Sherwood gives contemporary examples as well, like the actor Alexander Skarsgård, clad in a tuxedo jacket punctuated by a gold Cartier *Juste un Clou* pin shaped like a carpentry nail. That is not to say maximalism is avoided entirely in Sherwood's choices, but it is restrained to decoration of single objects: Theo Fennell's *Sic Transit Gloria Mundi King Henry VIII,* a combination brooch/pendant, exalts and jests its namesake with a rendering of Henry's iconically bejeweled torso in white and yellow gold set with multihued enamel and diamonds. In place of the king's head is a finely carved ivory skull.



Jewelry for Gentlemen
James Sherwood
Thames & Hudson, 2018

The immortalization of Henry VIII typifies another facet of Sherwood's gentleman archetype: he remains undeniably British. Sherwood deploys a characteristically British wit with a reference to Queen Mary of Teck's "magpie tendencies,"[3] or in describing the effect of using a stickpin on a Hermes silk tie, creating "more holes than Caesar's corpse."[4] The strongly British character continues with the selection of profiled jewelers and retailers, half of which are based in London. Despite this predilection, Sherwood includes French examples by way of Van Cleef & Arpels, Boucheron, and Cartier, while America's influence is characterized by Tiffany & Co. and David Yurman. International jewelers include Ara Vartanian, a Brazilian-Armenian jeweler based in London's Mayfair district, and Hemmerle, located in Munich.

The individual pieces of jewelry featured reflect the breadth of the Western style, from Greco-Roman antiquity through modernist abstraction, though Sherwood betrays a limited appreciation or understanding for global influences in jewelry aside from those appropriated into the Western vernacular. The most notable interpretation of non-Western influence emerges in Sherwood's profile on Cartier, who was the first jeweler to work in Egyptian revival style, setting ancient scarabs into designs for jewelry and boxes.[5] Foreign tastemakers receive a similar interpretation, as with Maharaja Rao Holkar II of Indore and Maharaja Sir Bhupinder Singh of Patiala, both of whom approached Cartier to design jewelry suites from heirloom stones. A subtle hint of classicism also accompanies this myopic perspective, underscored in Sherwood's statement on friendship bracelets: "Wearing multiple bracelets for sentiment's sake or fashion is so mainstream now for men of all ages that jewelers are looking to trade up on the trend and replace ethnic beads and threads with precious metals."[6] This vague use of "ethnic" erases the indigenous Latin American craft origin of the bracelet's style in favor of privileging the elite status of precious materials.[7] While the isolated impact of these examples may not register immediately, the interpretive void regarding global influences and subtly superior rhetoric leaves a distastefully imperialist impression amid the current climate of Brexit-era Britain.

Although Sherwood displays a limited cultural knowledge, his interpretation of the intersections of gender, masculinity, and jewelry provides a nuanced, modern approach that acknowledges an evolution away from traditional binaries of gay vs. straight and male vs. female. Admittedly, this book does not embrace the philosophy of post-gender liberation, which sees gender as an oppressive social construct that limits human potential and self-actualization.[8] Sherwood's approach is more object-centered; he does not allow the perceived gendering of a jewelry piece to limit its wearability by a twenty-first-century gentleman. Instead, jewelry type and appropriate scale are key. In his discussion of lapel pins and brooches, Sherwood suggests that "celestial, botanical, animal, and insect motif brooches created for ladies in the nineteenth and twentieth centuries translate beautifully to a cocktail suit or DJ lapel."[9] A Victorian diamond twelve-ray star brooch from Bentley & Skinner illustrates the point, but the author

A Victorian diamond twelve-ray star brooch from Bentley & Skinner, centered on a 0.65ct old brilliant-cut diamond (c.1870). Tailoring by Henry Poole & Co. Courtesy of Andy Barnham

nonetheless anchors this female gendered piece firmly within the confines of a stereotypically gendered male suit by Henry Poole & Co. In discussing bracelets, Sherwood takes a different stance: "Even in this age of gender fluidity, a Cartier *Tutti Frutti,* Bulgari *Serpenti,* or Elsa Peretti for Tiffany & Co. *Bone* cuff is not designed in proportion to be worn on a man's arm, although the new Peretti *Bone,* with a black finish over copper, has promise."[10] Discussions of jewelry signaling sexual orientation emerges in the context of stickpins that feature the image of Saint Sebastian as a discreet symbol of the wearer's sexuality; Sherwood likens this to the geolocational gay hook-up app Grindr."

While Sherwood's range of selected styles of jewelry and tastemakers runs the gamut from dandies to the alpha males, he always focuses within the context of the cis-gendered male body. This subtle flouting of gender while simultaneously upholding conventions and remaining within its confines is in keeping with the performative nature of the dandy archetype that Sherwood greatly admires, and to whom *Jewelry for Gentlemen* is a compelling tribute.

John-Duane Kingsley is a design history writer and curator whose work focuses on gender, historic interiors, and contemporary craft.

1 "The Modern Voice of Classic Elegance," *The Rake,* accessed January 03, 2019, https://therake.com/. / **2** "Interview with James Sherwood," interview by Ville Raivio, *Keikari,* March 2, 2013, accessed January 2, 2019, http://www.keikari.com/english/interview-with-james-sherwood / **3** James Sherwood, *Jewelry for Gentlemen* (Thames & Hudson, 2018), 189. / **4** James Sherwood, *Jewelry for Gentlemen*, 100. / **5** James Sherwood, *Jewelry for Gentlemen*, 122. / **6** James Sherwood, *Jewelry for Gentlemen*, 184. / **7** Shaye Radin, "Friendship Bracelets: Their Origin, Meaning, and Importance," NOVICA Blog, June 10, 2017, accessed January 03, 2019, https://www.novica.com/blog/friendship-bracelets-their-origin-meaning-and-importance / **8** George Dvorsky and James Hughes, "Postgenderism: Beyond the Gender Binary," *Institute of Ethics and Emerging Technologies Monograph,* no. 003 (March 2008): Abstract. / **9** James Sherwood, *Jewelry for Gentlemen*, 184. / **10** James Sherwood, *Jewelry for Gentlemen*, 187. / **11** James Sherwood, *Jewelry for Gentlemen*, 106.

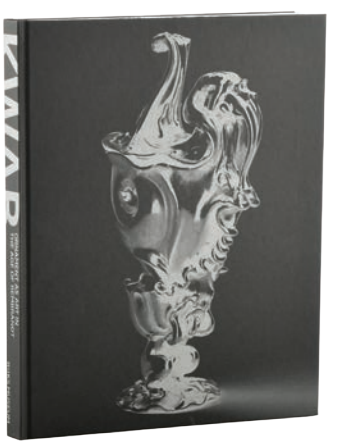
MORE THAN SURFACE

BY EMILY CULVER

ORIGINATING IN THE EARLY seventeenth century, kwab—a style of fantastical images created from the artist's imagination that defy rules of gravity, hierarchy and actuality—became a creative outlet for artists, primarily metalsmiths. Similar in some aspects to grotesquerie, kwab stood in stark contrast to the realistic imagery that was preferred amongst the elite and artists. As the accompaniment to an exhibition of a similar title, *Kwab: Ornament as Art in the Age of Rembrandt* is a masterfully composed catalog of works that illustrate this most prominent Dutch contribution to decorative arts.[1] Authored by Reinier Baarsen, the Rijksmuseum's Senior Curator of European Furniture and Professor by special appointment of the History of the Decorative Arts at Leiden University, this book is composed of just under 300 pages divided into eleven chapters, and photo reproductions of supporting works. Over half of the artworks are within a metalsmithing vernacular, a testament to the innovation set forth by master craftsmen in the medium that would later be adopted into other modes of making.

Kwab, a word mostly used in the Netherlands, is defined as a flabby fold or thickening of a human or animal body. The qualities of this aesthetic are difficult to describe in words, and admittedly, it is the very nature of this style to be slippery and fluid. Furthermore, the abstract nature of ornamentation and lack of theoretical research pertaining to the decorative arts also marks readings of kwab style as speculative. Key signifiers become apparent as one reviews the vast collection of works depicted in detail throughout these pages: undulating surfaces are often described as lobate and auricular in nature, and kwab forms ebb and flow from recognizable entities—animals, human figures, and shells—into monsters, masks, bones, and flaccid folds. *Kwab* provides a clear roadmap to the reader in discerning which works only nod toward kwab versus those with many influential trademarks and keystones of the style.

While many varied examples of kwab are on display throughout the text in the form of drawings, prints, furniture, interiors, and functional objects, nothing compares to works made by silversmiths, especially those of the van Vianen lineage. Baarsen argues that a gold cup completed by the Dutch silversmith Paulus van Vianen (1570–1613) in 1610 contains the earliest known dimensional object made entirely of kwab, in the form of a knob perched atop the lidded vessel. Though small in scale, this piece represents



Kwab: Ornament as Art in the Age of Rembrandt Reinier Baarsen nai010 publishers in conjunction with Rijksmuseum Amsterdam

Adam van Vianen (I)
Lidded ewer and detail, 1614
Purchased with the support of the Prins Bernhard Fonds, the Vereniging Rembrandt and the Stitchting tot Bevordering van de Belangen van het Rijksmuseum.

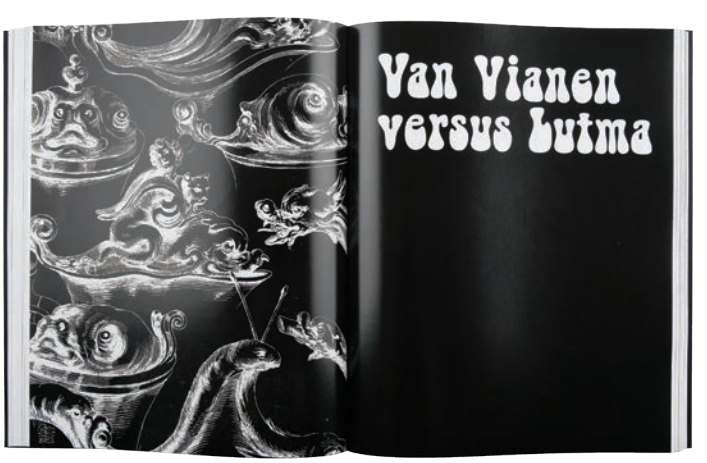
auricular vernacular, both forms reference knobby bones and joints flanked by masked faces.

Perhaps the most influential and celebrated embodiment of kwab is a ewer created by Adam van Vianen (1568–1627) in 1614. Commissioned by the silversmith's guild in Amsterdam to commemorate the life and death of his brother Paulus, multiple angles and details provided in *Kwab* show that this autonomous work takes Paulus's small knob to a much larger scale. Twisting and turning forms morph back and forth from legible entities into lobes and faces. The repeated celebration of this unique ewer was confirmed through paintings of the time, which are compared side by side on spreads as well as scattered throughout the text chronologically. The ewer was depicted as the jar of oil belonging to Mary in *The Lamentation* by Pieter Lastman (1615); is found center stage in the portrait of the governors of the Amsterdam silversmiths guild by Thomas de Keyser (1627); in a modified version as Pandora's box of evils in a painting by Barend Graat (1676); and on the cover of this very catalog! A 1635 dolphin basin made by silversmith Christiaen van Vianen, the son of Adam van Vianen, is one of several of his that omits carefully chased imagery of Roman histories and mythologies that populated many similar pieces. This created a dramatic shift in the overall function of the work, shifting the subject of the piece inward to its depiction of beautifully chased water and a uniquely asymmetrical silhouette.

Following Adam van Vianen's death, Johannes Lutma (1584–1669) was elected master silversmith in Amsterdam. This new appointment afforded Lutma much recognition and the opportunity to develop extravagant works of art that evolved his role from craftsman into designer. While not many examples of Lutma's work survive, evidence of his success is represented in spectacular kwab objects like cups and salt cellars, celebrated in etchings by Rembrandt, and in the remarkable brass choir screen in the Nieuwe Kerk (New Church) in Amsterdam.

Around 1646, Lutma commissioned portraits of himself and his wife from one of Amsterdam's most prominent painters, Jacob Baker. His ability to request such a prestigious commission attests to his recognition and importance within the community. Shown with his tools of trade, as was custom in portraits at the time, Lutma also requested that one of his notable works of art be included as well. As theorized throughout the text, this decision represents a timely shift in the artist's perception of self that began to proliferate various art forms during this point in history. Although all of the works discussed here were commissioned for wealthy individuals and collectives, as a style, kwab offered an awareness of the transition from craftsman into self-identified artist. Within these imaginative conceptions, born from the mind rather than reality, the van Vianen and Lutma silversmiths could begin to claim their creations as evidence of individual vision. *Kwab* gives intriguing insight not only into a unique and underrepresented decorative aesthetic, but also into how the seventeenth century saw a changed understanding of what it meant to be an artist and craftsman through the hands of innovative silversmiths.

a significant evolution by utilizing the style in a way that transcends surface ornamentation, instead dictating the entire form and shape of the modest knob. Another influential work by Paulus, a silver ewer and basin from 1613, pushes against convention. By applying a highly detailed and uninterrupted relief to both the front and back of the basin, Paulus has created a new type of decorative object that defies functionality; it holds no place for the ewer and must be viewed in the round. Made of two separate pieces and secured together with bolts of the



Interior view of *Kwab: Ornament as Art in the Age of Rembrandt*

Emily Culver is a studio artist and instructor in the Craft and Material Studies Department at Virginia Commonwealth University.

1 *Kwab. Dutch Design in the Age of Rembrandt* ran at the Rijksmuseum in Amsterdam from June 30–September 16, 2018.

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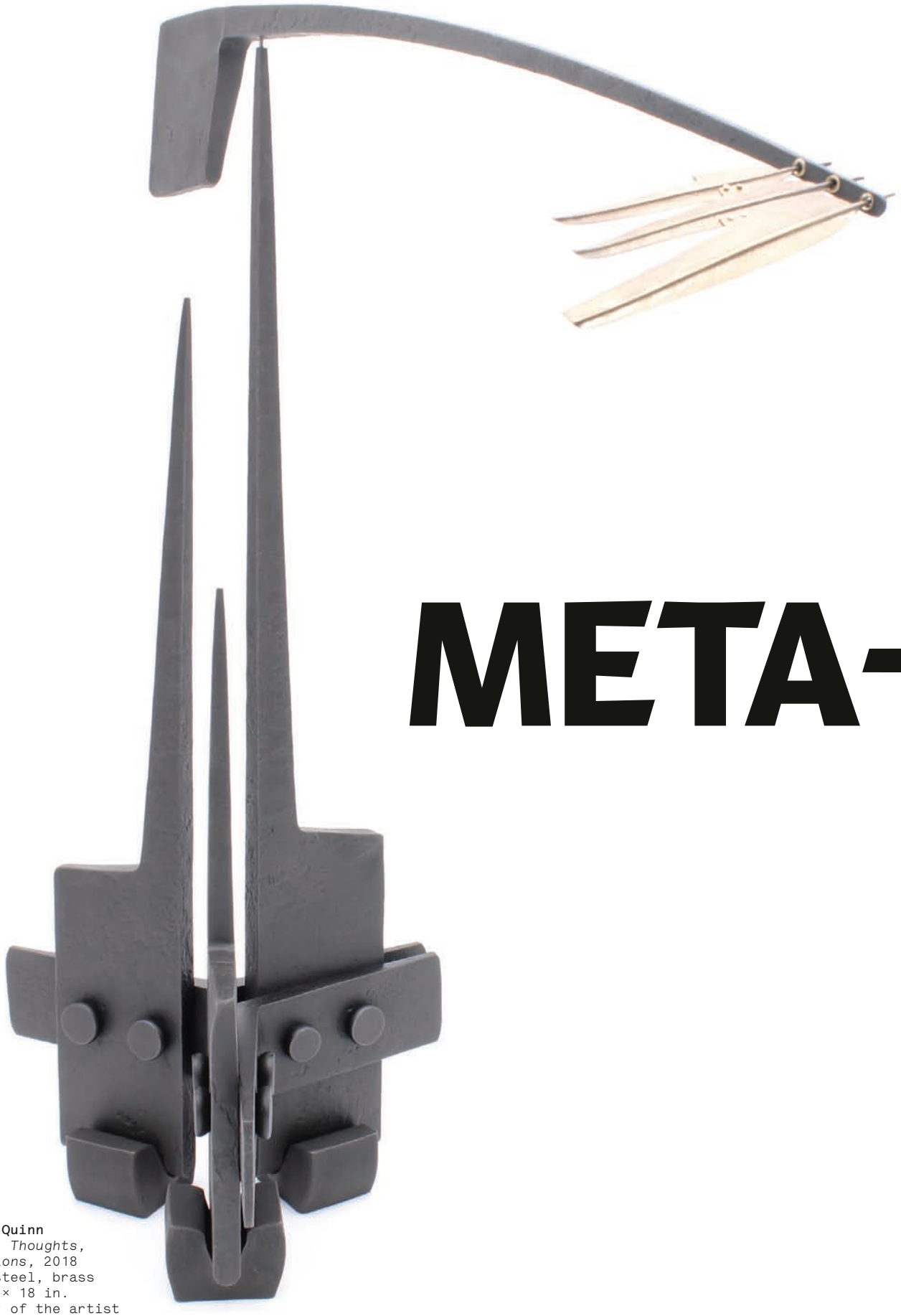

META—

Patrick Quinn
Moments, Thoughts, and Actions, 2018
forged steel, brass
12 × 12 × 18 in.
Courtesy of the artist

Twenty-first-Century Blacksmithing, Activism, and Community

BY RACHEL DAVID

—FORMATION

Johannes Postlmayr
Distorted Geometry, 2017
forged steel
100 × 70 × 60 mm
Courtesy of the artist

Jeffrey Funk
Slump, 2014
hand forged iron
and andecite
Courtesy of the artist

The field of blacksmithing is in flux. While the word is rooted in the Latin fluxus, meaning continual change, flux is also an additive in metalsmithing that can be a medium for cleaning and purifying. Likewise, there is a newness and tension in this field, reflecting changes in how practitioners would like their work—and themselves—to be viewed. For the past several years, many small groups and individual smiths around the country have worked to create new initiatives and community projects. A recent exhibition, *Meta-Formation: Experiments and Rituals,* marks this vital moment,[1] and explores the process of blacksmithing from a blank slate and raw material to finished work. The artists included present a series of technical and aesthetic experiments that represent contemporary blacksmithing practice, and show how smiths are upsetting expectations, creating a supportive and increasingly inclusive community while working in an ancient craft. With *Meta-Formation* at its center, this article explores the history of blacksmithing, the artists who are championing the flux of the field today, and the ways that individual practitioners—including me—can impact and shape the conversation.

Looking Backward to Look Forward

A subculture of both younger and more seasoned smiths is defying the public perception of the blacksmith. In the United States, traditionally blacksmiths have been represented by white men with big beards, making tools large and small, as well as ornamental and architectural ironwork. Known as the grandfather of contemporary smithing, Samuel Yellin started to shift public opinion from the farm do-all or industrial smith to the urban, high-end ornamental shop. Trained in Ukraine, Yellin operated a large and prolific forging shop in Philadelphia from 1909 until his death in 1940, which employed up to 250 smiths; his influence is seen extensively on the East Coast and beyond. Similarly, Cyril Colnik, known as the "Man of Iron," was born in Austria and settled in Milwaukee in 1893; his impressive and difficult turn-of-the-century ironwork still has potent appeal. Both men worked on commission, outfitting architecture and interiors around the country. They laid the groundwork for contemporary smiths to follow a career path primarily focused on architectural ironwork, with some interior work and a little furniture peppered in.

In the late twentieth century, artists like Albert Paley and Tom Joyce began to move away from exclusively functional and architectural work ("house jewelry" and "home adornment" are helpful ways of thinking about this large-scale work). They began to create artistic pieces that were either purely sculptural, or used an artistic vocabulary to produce functional work. The early works of both Joyce and Paley, though very different in style, were primarily architectural projects and furniture, then veered to large-scale public works; Paley's wild and colorful constructions contrast with Joyce's giant monolithic forgings with natural patina.

By the mid-twentieth century, the United States was left with few working smiths able to pass on their knowledge through traditional apprenticeships. Those wishing to learn smithing began to attend craft schools, such as Penland in Western North Carolina, or attend academic programs such as the University of Southern Illinois in Carbondale, which offers an MFA in blacksmithing. Established and innovative practitioners such as Jeffrey Funk, Daniel Miller, Hoss Haley, and Elizabeth Brim share their work with countless students in various ways, and have influenced many younger smiths. The work of these four artists is strongly concerned with concept, craft, and quality, and marks a resurgence in contemporary smithing.

SMITHS ARE UPSETTING EXPECTATIONS, CREATING A SUPPORTIVE AND INCREASINGLY INCLUSIVE COMMUNITY WHILE WORKING IN AN ANCIENT CRAFT.

Elizabeth Brim
Scroll, 2016
hand forged steel
20 × 14 × 8 in.
Courtesy of the artist

Blacksmiths as Change Agents

Funk, Miller, Haley, and Brim have provided influential models of devotion, aspirations, and ethics for me as not only a blacksmith and designer, but also a curator and teacher. While I make both custom and one-of-a-kind pieces of furniture, sculpture, and architectural elements, my personal work synthesizes self-reflection and criticism of social systems. I encourage my colleagues to use our skills and leverage our power as artists to be agents of social change, challenging the blacksmithing community to be more inclusive particularly with respect to gender, race, and sexual orientation. I am committed to give back to the broader communities that I work in, by volunteering in the local arts high school and creating art and public works for nonprofits around the country. I am using my skills to benefit underserved communities and advance the changes I want to see.

In 2016, I initiated a series of workshops at community blacksmithing organizations around the country to build a piece for a local nonprofit or host campus, the first of which was at the Crucible in Oakland, California. The resulting sculpture was installed by a bus stop in front of their building. The second workshop was held at Community First Forge in Austin, Texas. The bench we made has been installed at Mobile Loaves and Fishes community in Austin.

Community First Forge bench, 2016, Austin, TX.
Group project for Mobile Loaves and Fishes
Facilitated and designed by Rachel David

Rachel David
Sideboard, 2017
Forged, formed and fabricated steel
30 × 54 × 18 in.
Photo: Sesthak Boonchai

The third of these workshops, in July 2019, is part of the exhibition *Meta-Formation: Experiments and Rituals.* Held at the Appalachian Center for Craft, the workshop will create a piece to be donated to the nearby Smithville Public Library. These workshops reinforce my belief that blacksmiths, with the skills we hold, are uniquely positioned to provide services, both educational and artistic, to a wider community; they are part of my practice as an artist. We teach each other, build community, bring excitement, and imbue each participant and community observer with energy and a sense of general goodness.

Together with blacksmiths Lisa Geertsen of Pratt Fine Arts in Seattle and Anne Bujold, resident artist at the Appalachian Center for Craft, I organized an August 2018 gathering at which twelve women founded the Society of Inclusive Blacksmiths.[2] At this event, participants worked together for three-and-a-half days to create a public bench, which was donated to Summit Arts Camp in Government Camp, Oregon. It was the only time I had been in a productive, noneducational environment that was all female. Women of all skill levels came together and completed an ambitious project. There were no moments when anyone assumed another person could not accomplish the task at hand.

The goal of the newly formed Society of Inclusive Blacksmiths is to support equity, diversity, and inclusion in the field of blacksmithing and foster honest professional discussion. We create spaces that include and create opportunities for women (particularly women of color) and trans and gender-nonconforming people to safely learn and practice blacksmithing—often thought of as a male-gendered mode of making—in nongendered and anti-racist spaces. We hold personal shops and regional organizations accountable for their behavior by suggesting a code of conduct intended to make the field more inclusive. It explicitly discourages gendered, racially insensitive, and aggressive language, is anti-racist, anti-misogynistic, anti-transphobic, and includes people who are systematically marginalized. These efforts will redefine who represents the field, and will encourage more women and people of color to experiment and take up a hammer. In creating a code of conduct, and providing resources to help people navigate professional situations involving racism, misogyny, and transphobia, the Society of Inclusive Blacksmiths will act as a resource and referral network for a more diverse smithing community.

BLACKSMITHS, WITH THE SKILLS WE HOLD, ARE UNIQUELY POSITIONED TO PROVIDE SERVICES, BOTH EDUCATIONAL AND ARTISTIC, TO A WIDER COMMUNITY.

Artists-Educators-Activists

Many of the people represented in *Meta-Formation: Experiments and Rituals* are educators, activists, and advocates who work to bring others into the fold through education and outreach. There are many examples of people working together to use their passion for blacksmithing to make change in the field and in the world. The following four endeavors are examples of how blacksmiths are directing their activism.

Haley Woodward is an artist and blacksmithing teacher at Austin Community College and co-founder of the Austin Metal Authority, a collective of metal artists, blacksmiths, welders, and fabricators that collaborates on large-scale projects, demonstrations, and offers welding and blacksmithing lessons. She worked with friend, artist, and co-founder Colby Brinkman and Community First Forge founder Evan Wilson to start the Austin Forging Competition in 2010. Drawing around a thousand spectators each year, the event promotes the Community First Village, an intentional community helping to house Austin's homeless population. The Austin Forging Competition provides an opportunity for

Lisa Geertsen
Wide Open, 2018
forged steel and copper
8 × 12 × 24 in.
Courtesy of the artist

Opposite:
Mike Rossi
Ansible, 2018
formed steel
24 × 24 × 14 in.
Courtesy of the artist

Right:
Betsy Lewis
Sensorium, 2015
forged and fabricated silver
variable dimensions
Courtesy of the artist

metalworkers from across the country to have a much-needed dialogue.

The Philadelphia-based trio of smiths Mike Rossi, Warren Holzman, and John Rais is hosting the "Looking Forward" symposium at Bryn Athyn Cathedral in Montgomery County, Pennsylvania. According to the conference materials, they hope to "take a broad look at our field and exchange ideas. The objective is to spark discussion related to the current state of our practice, to access where metalworking is heading in the 21st century, and how our process informs metal design in architectural work, furniture or sculpture."[3]

Patrick Quinn and Daniel Neville, both graduates of the Southern Illinois University at Carbondale, took over the Center for Metal Arts in Johnstown, Pennsylvania, three years ago and saw great potential for a teaching facility. Quinn says that quality work starts with quality tooling; therefore, he and Neville work to forge the best possible tooling for the center, and make it the best forging classroom it can be.

Jeffrey Funk, a longtime practitioner who looks deeply at the craft of blacksmithing with a holistic practice, now facilitates The New Agrarian School near Big Fork, Montana. This school is dedicated to fostering development of contemporary forged metalworking, while both reaching into history and creating a more sustainable future. An important focus of New Agrarian addresses fuel usage and climate change. Historically, industrial "progress" and the necessity of the smith in that process created an allowance for incredible fuel usages. Today, as we face the repercussions of such environmentally disruptive practices, the New Agrarian School aims to use blacksmithing—and eventually other crafts—to aid the transition to a post-carbon-fuel world.

New Work and New Workers

Progressive, community-oriented, and activist projects by contemporary smiths bring us back to the tension and responsibility present in the best blacksmithing today. Artists work to push the envelope of the craft. We build monumental sculptures and create giant installations examining humans' impact on our world. The divide between contemporary art or design with material that some might see as conflicting with traditional toolmaking, community, and functionality simply does not exist. Each maker performs the necessary task to accomplish the goal at hand, but ultimately there is a calling to do more and be more and to work towards a greater good. The effort to not only educate, but to affect a systemic shift in practice and perception, is growing more widespread in contemporary smithing, fulfilling the desire of smiths from all backgrounds to practice sustainably, to do wild work, and to express their passions through art and social involvement.

Further Resources

Society of Inclusive Blacksmiths: www.inclusiveblacksmiths.com
Center for Metal Arts: www.centerformetalarts.org
The New Agrarian School: www.newagrarianschool.org
Looking Forward Symposium: www.ironsymposium.com
Appalachian Center for Craft: https://www.tntech.edu/craftcenter/workshops/summer-workshops/
Rachel David: www.redmetal.net

Rachel David is a blacksmith, sculptor, designer, and maker. Her forging practice reflects her deep belief that as an artist it is her responsibility to make work that comments on and works to change the world.

1 *Meta-Formation: Experiments and Rituals* can be seen March 14–July 19, 2019, at the Appalachian Center for Craft in Smithville, Tennessee. It came together with the help, trust, belief, and advice of Debra Ruzinsky, Director of the Appalachian Center for Craft; Delyth Done, Blacksmithing Program Director at Hereford College of Art; and Carissa Hussong, Director of the Metals Museum in Memphis, Tennessee. The jurors—Hoss Haley, Andrew Cooperman, and Sarah Darro—worked diligently to choose passionate, original works from over one hundred submissions. Their words can be found in the catalogue for this exhibition, which is for sale online at lulu.com. This show emerged out of *Nü Iron Age* (2017), a juried exhibition in concert with the Society of North American Goldsmiths conference in New Orleans and supported by the Artist-Blacksmith's Association of North America. / **2** Founding members include Lisa Geertsen (WA) Anne Bujold (TN), Monica Coyne (CA), Ann Klicka (WI), Alice Garrett (Vic-AUS), Heather MacLarty (CA), Leslie Tharpe (FL), Ryna Kady (WA), Lynda Metcalfe (NC), and Caitlin Morris (MD). / **3** E-mail exchange with the author, November 5, 2018.

Mechanical Magic

The Automata of Brittany Cox

BY SAMANTHA DE TILLIO

Cox diagnosing a Bontems singing bird clock (c. 1880) in the Memoria Technica studio, Seattle, Washington, 2018.
Courtesy Brittany N. Cox
Photo: Ben Lindbloom

Brittany Cox is an antiquarian horologist, a sort of seventeenth-century mechanic. She specializes in complicated clocks, watches, and objects that include an additional element of function: music, repeating mechanisms, automata, or mechanical magic. She inhabits a world of forms and materials outside of our contemporary lives for the most part. Cox is one of a handful of people in the world with her particular skill set. In fact, she may be the only person in the US with her exact conservation, engineering, and artistic qualifications. Few hand skills and processes are more specialized than the type of complex horology that she is working tirelessly to keep alive.

Maker unknown, possibly Piguet & Capt.
Singing Bird Box with Musical Box and Watch, c. 1820; restoration and horological conservation 2014 by Brittany Cox
varicolored gold, diamond, split pearls, enamel, brass, steel, zephyr, bird feather
Photo by and courtesy Brittany N. Cox

Cox's interest in mechanical objects began as a young child. She was given a music box with a pirouetting ballerina, a familiar object to many young girls—although most likely don't think of it as what it is: a simple automaton. This gift spurred a collection of treasured music boxes and musical snow globes, the latter of which she deconstructed in order to harvest the mechanisms inside. An unstable childhood led her to appreciate the rules that govern such mechanical objects, seemingly organic yet scientific in invention. Her youthful tinkering sparked a love of handwork, and she spent her first professional years as a jeweler. A universal sense of curiosity subsequently led to a bachelor's degree in philosophy from the University of Texas at San Antonio, where she focused in metaphysics and epistemology.[1]

First formally introduced to automata during her undergraduate studies, Cox became enamored with the seventeenth-century use of machines to explore philosophical questions about the essence of humanity and the origin of consciousness. During this period, the theory of dualism—which argued the separation of the mind and body—prevailed. Although ancient in origin, dualism was developed into its modern form by the French philosopher, mathematician, and scientist René Descartes (1596–1650), whose work has been popularly distilled to the adage, "I think, therefore I am."[2] This theory of separation led him to the conclusion that, in a way, humans and animals are automata animated intellectually by God, the omnipotent divine mechanic.[3] An innate human drive to replicate life, combined with contemporary theories about the mechanical nature of the human body, led to inventions such as *The Flute Player* (1737) by French inventor and artist Jacques de Vaucanson (1709–1782), a life-size shepherd that played the flute and had a repertoire of twelve songs. *The Flute Player* was animated by a bellows system that inflated and deflated its lungs, pushing air across the instrument through articulated lips, and used articulated fingers to achieve the correct notes, thus replicating the mechanical functions of a human body step by step.[4]

Enamored with the history and theory of these objects, Cox went on to earn a Watchmaker of the 21st Century Certification, a Swiss American Watchmakers Training Alliance Certification, and a Watchmakers of Switzerland Training and Education

Programme Certification from the Watch Technology Institute in Seattle. She subsequently received a Conservation and Restoration of Clocks Diploma, Conservation of Clocks Post-Graduate Diploma, and a master's in Museum Studies from West Dean College at the University of Sussex in the United Kingdom. While studying watchmaking, she learned micromachining, fine finishing, and mechanical systems, and developed the intricate handwork needed for more complex mechanisms. She then studied clockmaking, which the artist describes as a much more robust mechanical form, and learned how to machine larger objects, cut gears, and replicate historic bench practice.[5] At West Dean, she learned a plethora of additional craft techniques, including leatherworking, blacksmithing, woodworking, gilding, papier-mâché, and organ building, all in the service of the complex objects she wanted to conserve and create. Most notably, she studied with horologist Matthew Reed, who at the time was engaged in the conservation of *The Silver Swan*, an "intricate automaton made in 1773 that twists its neck to preen its feathers, dips its head into a river of glass rods and catches a silver fish in its beak."[6]

Mechanical objects have been used for centuries; they are referenced in texts from antiquity,[7] and survive from the medieval period. Despite this long and complex history, automata are most readily associated with the eighteenth and nineteenth centuries.[8] This is Cox's favorite period of automata innovation because "complex cams," a mechanism that allows for more realistic movements, were first introduced, as well as the earliest singing bird boxes, which utilized miniature pipe organs and later slide whistles and bellows systems to create musical effects.[9]

Cox's own portfolio is extensive. Her work is conservation-focused; her clients are primarily private collectors and range from those who have that one special heirloom to collectors who specialize in stage magic, mechanical music, or small clocks. She also creates mechanical tricks for magicians, either restoring antique tricks or making new ones. Finally, she does some work for museums, although this makes up the smallest portion of her practice because, as Cox observes, there is a lack of attention to the conservation of these objects in the United States. She endeavors to make the traditions of automata and guilloche (a decorative

Victory Bird, restoration and horological conservation 2017 by Brittany Cox
feathers, leather, brass, steel, wood
8 × 6 × 4 in.
Photo by and courtesy Brittany N. Cox

Cox feathering a bird with new beak and tail for a c. 1920 Griesbaum singing bird box, 2016.
Photo by and courtesy Brittany N. Cox

Above:
God Save the King, restoration 2012 by Brittany Cox
sterling silver, brass, steel, acrylic, shagreen, isinglass, gold, wood
2 1/2 × 1 1/2 × 1 in.
Photo by and courtesy Brittany N. Cox

It's worth remembering that automata have always explored the notion of what makes us human.

technique in which a precise, intricate, and repetitive pattern is mechanically engraved via engine turning) accessible to a wider audience, so in addition to her conservation and studio practice, she makes small spinning tops and guilloche coloring books to engage a casual and first-time audience.[10]

Cox's past projects include *Victory Bird* (2017), an antique singing bird in a cage originally made by Bontems in 1880, which Cox received sans bird. She restored the mechanism and created a new bird comprised internally of steel wires and a gearing system, including a cam that dictates the rotation of the head and movements of the beak and tail.[11] Cox used bellows for lungs and a slide whistle for the bird's voice.[12] She then hand trimmed, shaped, and individually applied more than 100 feathers to the leather-wrapped brass body of the bird.[13] For *God Save the King* (2010), a musical sailing ship from the early nineteenth century, Cox identified an incorrectly pinned barrel that failed to interact with its comb, thus rendering the small ship silent. She created a new barrel and conserved the mechanism, restoring the object's music, then regilded the ship, made wire rigging for the masts, and created a case for the piece from sterling silver and shagreen.[14] In 2012, Cox developed a smoking machine in order to test various bellows constructions made from wood, brass, steel, and three different types of covering materials. Each was tested for strength, durability, and the robustness of smoke produced. With the findings, she was able to restore a nineteenth-century smoking automaton by rebuilding the bellows system, in addition to repairing its badly damaged body.[15]

On any given day, Cox may be working on a number of horological projects in her 1,000-square-foot combination workshop, studio, and library. It is truly a job where no two days are alike. She's currently in the diagnostic and disassembly stage of a conservation project featuring a singing bird box with watch, and in the process of making a new work called *Bird Song,* a cabinet of flora containing singing birds. Cox is writing the music herself and will build a machine that can cut the song cams in order to generate her composition.[16]

Because of the age of the objects she works on, there are numerous technical challenges, as well as ample opportunity for creative problemsolving. For example, Cox may need to replace jewels and precious stones, and in order to preserve the aesthetic and period integrity of the object, she needs an exact match. A contemporary replacement would not have been made the same way, so it may take months or years to find the exact material to complete the project. The same can be said for springs and gears. The inherent inconsistencies found in period steel and in handcrafted springs are challenging to replicate with contemporary equipment and metals. Even the slightest change in a replacement spring can alter the distribution of power in the mechanism and affect the music or movement of a work. As a result, Cox often makes her own tools—gauges, levers, punches—based on the project's needs. The frustration inherent in constant problemsolving makes moments like the first time Cox heard *Victory Bird* sing all the more wondrous, marveling both at the tiny mechanical object and her own ability to bring it back to life.

Cox has worked on numerous projects in which a large portion of the object had

been lost and she had to remake much of it herself. She does a significant amount of original guilloche, and in fact, her workshop is the only place in the US (and until last year, the world) that teaches the skill. Despite even this high level of artistic intervention, until recently Cox hasn't been able to devote much time to making her own automata. She manages her conservation workshop Memoria Technica (founded in 2012), and is busy with numerous commissions, lectures, and teaching. However, in 2018 Cox created *Cochlea (Snail),* her first automaton from concept to finishing, an opportunity the artist affords to her status as one of sixteen inaugural finalists of the Museum of Arts and Design's (MAD) Burke Prize, and her inclusion in the associated exhibition *The Burke Prize 2018: The Future of Craft.*[17]

Cochlea provided Cox with the opportunity to combine her vast interests in mechanical objects, philosophy, sacred geometry, and material culture. It is inspired by medieval bestiary (illustrated volumes that referenced the symbolic language of animals in Western Christian art and literature) and manuscript illumination (elaborate illustrations in the margins of religious texts). Scribes used these illustrations to reinforce moralizing messages and to parody the indignities and absurdities of their world. The snail was a popular motif at the turn of the fourteenth century, often pictured in combat with a knight. According to popular interpretation, the snail variously symbolizes a mockery of human cowardice; class struggles between the ruling elite and the peasantry; anti-foreign slurs against the Germanic Lombards, whose kingdom was conquered by the Frankish king Charlemagne in 774 AD; and the Virgin Mary and the Resurrection. The rendering of the snail with rabbitlike features further symbolizes spiritual rebirth, but also lust and sexuality, emphasizing the dual nature of humanity.[18] Cox enlivens the marginal snail imagery in her mechanized artwork, which moves in the pattern of an infinity symbol—a nod to the snail's association with the Resurrection.

The snail also became associated with sacred geometry (the existence of harmonious geometric proportions in nature established by the perfection of God) because of the manifestation of the golden mean—philosophically, the middle point between two extremes—in its shell, resulting in a perfect mathematical ratio and spiral. The golden mean has been used for centuries in art and architecture, and is central to ornamental wood turning and guilloche, techniques used by Cox in the snail's shell and on the wooden base. The medieval snail communicated messages central to spirituality at a time when people were increasingly curious about the origins of our universe and the fundamental role of humans' existence in it.

It's worth remembering that automata have always explored the notion of what makes us human. From the hydraulic-powered automata documented in antiquity, to medieval religious devotional objects, to fanciful amusements of the eighteenth and nineteenth centuries, these objects chart the course of human innovation. The questions they present are perhaps more relevant now than ever. In a period when artificial intelligence is becoming increasingly quotidian, philosophies of consciousness are expanding to consider the future of humanity in an age when technology's intelligence surpasses our own. These are the questions at the center of Cox's practice. As she gives life to her own mechanized creatures, Cox and her precursors to modern robotics have much to offer our contemporary world.

Brittany Cox
Mineral Stands, 2016
turned box wood, black wood, cocobolo; guilloche on brass, steel, quartz, pyrite, bismuth
Photo by and courtesy Brittany N. Cox

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Brittany Cox
Cochlea (Snail), 2018
brass, steel, sterling silver, shagreen, cocobolo
Snail: 2 1/4 × 4 × 2 1/2 in.,
Base: 1 1/2 × 4 3/4 × 4 3/4 in.
Photo by and courtesy Brittany N. Cox

1 Conversation with the author, November 27, 2018. / **2** Versions of dualism can be traced back to Plato and Aristotle, as well as the early Sankhya and Yoga schools of Hindu philosophy. Anthony Gottlieb, "Think Again, What did Descartes really know?" *The New Yorker* (November 20, 2006), https://www.newyorker.com/magazine/2006/11/20/think-again-2, Christopher A. Pallis, "Death," *Encyclopaedia Britannica* (July 19, 2018), https://www.britannica.com/science/death/Descartes-the-pineal-soul-and-brain-stem-death, "Dualism," The Basics of Philosophy, accessed December 11, 2018, https://www.philosophybasics.com/branch_dualism.html, and Richard A. Watson, "Cartesianism," *Encyclopaedia Britannica* (February 09, 2016), https://www.britannica.com/topic/Cartesianism. / **3** Jessica Riskin, "Machines in the Garden," *Republics of Letters: A Journal for the Study of Knowledge, Politics, and the Arts 1,* no. 2 (April 30, 2010): 16, http://rofl.stanford.edu/node/59. / **4** Conversation with the author, November 27, 2018; Kat Eschner, "This Eighteenth-Century Robot Actually Used Breathing to Play the Flute," *Smithsonian,* February 24, 2017, https://www.smithsonianmag.com/smart-news/eighteenth-century-robot-actually-used-breathing-play-flute-180962214/; and Jessica Riskin, "The Defecating Duck, Or, the Ambiguous Origins of Artificial Life," *Critical Inquiry* 29, no. 4 (2003): 599-633.doi: 10.1086/377722. / **5** Conversation with the author, November 27, 2018. / **6** Victoria Turk, "Science Museum's Robots: Who is really pulling the strings?" *New Scientist* (February 13, 2017), https://www.newscientist.com/article/2121092-science-museums-robots-who-is-really-pulling-the-strings/. The tour de force, which is in the collection of the Bowes Museum in Durham, United Kingdom, was created by London showman and dealer James Cox (1723–1800) and clockmaker, musical-instrument maker, inventor, and showman John Joseph Merlin (1735–1803), and was exhibited to acclaim at the 1867 Paris International Exhibition and later memorialized in American novelist Mark Twain's (1835–1910) book *The Innocents Abroad.* "The Silver Swan," The Bowes Museum, accessed December 11, 2018, https://www.thebowesmuseum.org.uk/Collections/Explore-The-Collection/The-Silver-Swan. / **7** Notably, the Catholic Church was a patron of the automatic arts and sponsored the printing of ancient texts on mechanical and hydraulic automata. Churches throughout Europe commissioned automata depicting Heaven, angels, and crucified Christs, as well as Hell and all manner of demons, used to invoke religious commitment in their parishioners. Outside of religious theatrics, automata were popular amusements among wealthy estate owners, often showcasing bawdy senses of humor and performing parlor tricks and pranks, such as so called "waterworks" automata that might spray unsuspecting guests with water. Jessica Riskin, "Machines in the Garden," *Republics of Letters: A Journal for the Study of Knowledge, Politics, and the Arts 1,* no. 2 (April 30, 2010): 23–24, http://rofl.stanford.edu/node/59. / **8** This association was popularized by *The Invention of Hugo Cabret* (2007, and its 2011 movie adaptation) by American author Brian Selznick (b. 1966), which drew inspiration from the true story of French illusionist and filmmaker Georges Méliès (1861–1938) who led many technical developments in cinema, most notably special effects, which included the use of automata. Brian Selznick, "Automata," *The Invention of Hugo Cabret,* accessed December 11, 2018, https://www.theinventionofhugocabret.com/about_hugo_auto.htm. / **9** Arguably the first recorded music was created when German composer George Frideric Handel (1685–1759) produced music for a number of clocks by horologist Charles Clay (1695–1740). And while Handel adapted arias from his extant compositions, the greater dexterity and speed of the mechanism (a pinned barrel) provided the possibility of a wider variety of compositional options. Jonathan Lennie, "The Triumph of Music Over Time: Handel and Charles Clay's Musical Clocks," *TimeOut,* last modified November 4, 2013, https://www.timeout.com/london/things-to-do/the-triumph-of-music-over-time-handel-and-charles-clays-musical-clocks; "The Triumph of Music Over Time: Handel and Charles Clay's Musical Clocks," Handel & Hendrix in London, last modified September 24, 2015, https://handelhendrix.org/podcast/the-triumph-of-music-over-time-handel-and-charles-clays-musical-clocks/; and William Barclay Squire, "Handel's Clock Music," *The MusicalQuarterly* 5, no. 4 (1919): 539-40, http://www.jstor.org/stable/738126.539-40. / **10** Email to author, January 9, 2019. / **11** Brittany Cox, Burke Prize submission materials, January 2018, and Gabriel Spitzer, "Seattle Horologist Masters Clockwork To Make Time Travel And Stand Still," *knkx,* last modified August 28, 2015, https://www.knkx.org/post/seattle-horologist-masters-clockwork-make-time-travel-and-stand-still. / **13** Brittany Cox, Burke Prize submission materials, January 2018. / **14** Brittany Cox, Burke Prize submission materials, January 2018. / **15** Brittany Cox, Burke Prize submission materials, January 2018. This project led to her master's thesis titled "A Preliminary Investigation into Materials used for Bellows Coverings in Smoking Automata." "Brittany Nicole Cox CV," Memoria Technica, accessed December 11, 2018, https://mechanicalcurios.com/brittany-cox-cv/. / **16** Email to the author, January 3, 2019. / **17** The Burke Prize is an annual juried award that reinforces the Museum of Arts and Design's (MAD's) commitment to celebrating the next generation of artists working in and advancing the disciplines that shaped the American studio craft movement. The 2018 award was juried by Michael Radyk, Director of Education of the American Craft Council, Editor-in-Chief of *American Craft Inquiry,* and artist; Jenni Sorkin, Associate Professor, History of Art and Architecture, University of California, Santa Barbara; and Namita Gupta Wiggers, Director of the Master of Arts in Critical and Historical Craft Studies at Warren Wilson College, and Director and co-founder of the Critical Craft Forum. This exhibition was co-curated by the author, who is a curator at MAD. However, she was not part of the jury who selected the winner or finalists. "Burke Prize," Museum of Arts and Design accessed January 2, 2019, https://madmuseum.org/content/burke-prize, and "The Burke Prize 2018: The Future of Craft Part 2," Museum of Arts and Design, accessed January 2, 2019, https://madmuseum.org/exhibition/burke-prize-2018. / **18** Lilian M. C. Randall, "The Snail in Gothic Marginal Warfare," *Speculum* 37, no. 3 (1962): 358-67, https://www.jstor.org/stable/2852357, and Phil Edwards, "This video explains why knights in medieval art fought snails," *Vox,* accessed September 2018, https://www.youtube.com/watch?time_continue=271&v=6ISOK-XtvYs.

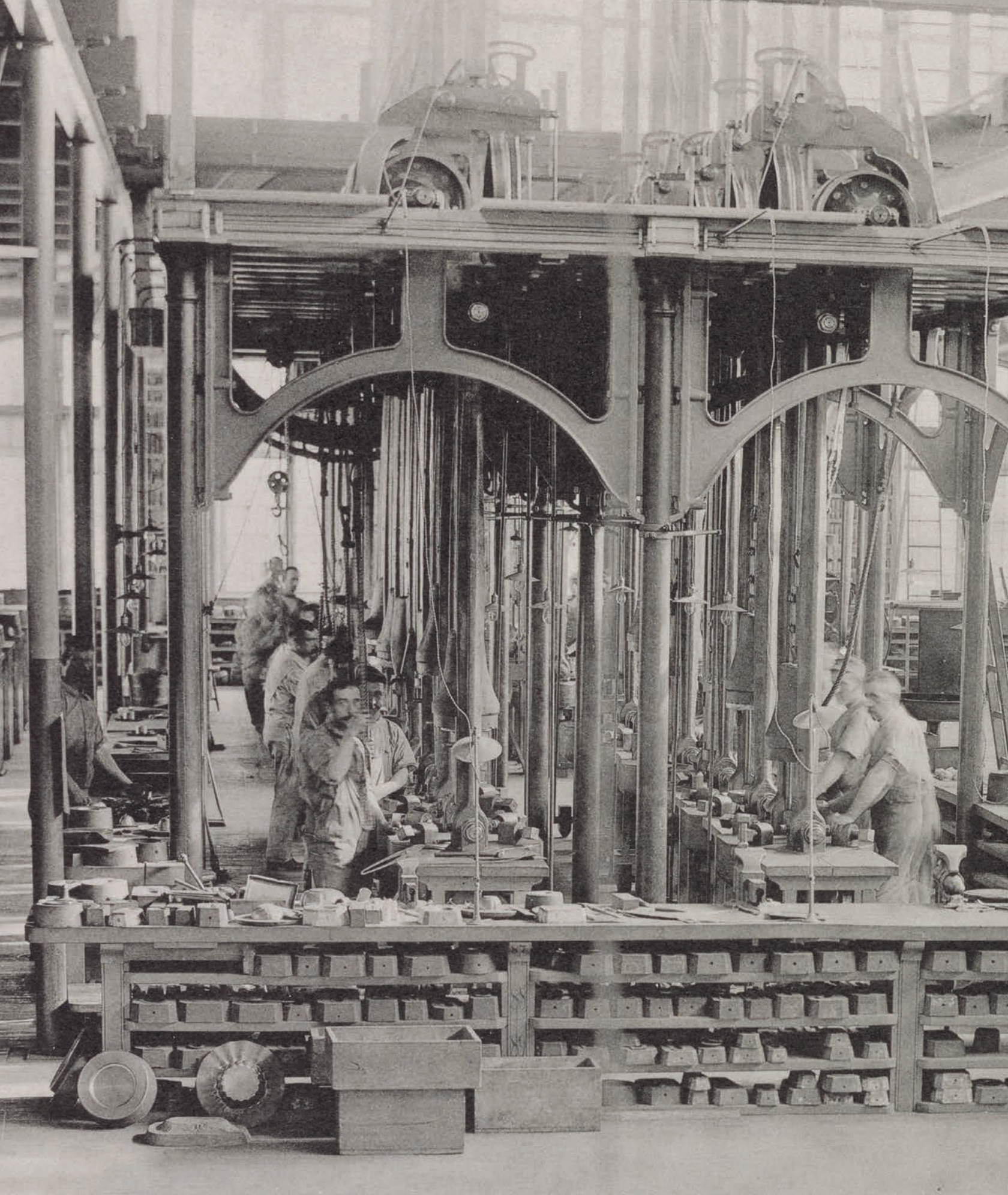
This page:
Gorham Manufacturing Company, manufacturer
Tea service, ca. 1860
coin silver
2001.37; RISD Museum; Museum Acquisition Fund

Opposite:
Drop presses at Elmwood works, 1892.

An Untried Experiment

Building the Gorham Manufacturing Company in Providence, Rhode Island

BY ELIZABETH A. WILLIAMS



Adeptly coupling art and industry, the Gorham Manufacturing Company produced a legacy of exceptional silver, illuminating more than a century and a half of American aesthetic styles, industrial practices, and social histories. Founded in 1831, Gorham boldly rose from a small firm in Providence, Rhode Island, to an industry leader of stylistic and technological achievement in America and around the world. Commissioned to create everything from public presentation pieces to one-of-a-kind showstoppers for use in the private dining rooms of America, Gorham put uniquely American design and the aspirations of a youthful nation on the world stage.[1]

This overview of the company follows its ascent from a one-man shop to the largest silver company in the world. Throughout the manufactory's history, Gorham envisioned the desired outcome and then developed the best innovative technologies and techniques to achieve it, often forgoing limited traditional means and inventing transformative practices that significantly shaped silver production in the United States. It is an innovative history that might speak to today's experimental makers. Considered combinations of mechanization and handwork translated original ideas into well-designed, artistically executed work through consummate skill and craftsmanship in an ever-expanding exploration of what was possible in metalsmithing.

Before the 1847 retirement of founder Jabez Gorham, spoons, forks, and other smallwares were produced by hand.[2] Powered by a horse plodding in a circle in the basement, the workshop at 12 Steeple Street consisted of a first floor for manufacturing—with an iron safe built into the brickwork—and an attic where the burnishing was done. Working from 5:00am until 8:00pm, with one hour each for breakfast, lunch, and dinner, Gorham employees numbered about fourteen men, most of whom had been there since its founding; vacations were "unheard of."

The business operated in the manner of the era, which Jabez's son, John, described as "the day of the small things," until 1847, when "a material change in the business took place, which, as future events proved, was an important factor, if not the one of greatest significance in the formation of the Gorham Manufacturing Company." As he recounted, "The difficulties of making silverware with jeweler's tools with inadequate room and power had been growing more and more apparent. The old horse had become overloaded; steam power was a necessity. It was evident that if progress was to be made and the business extended, there must be a revolution in the method of manufacturing. Heavy rolls and presses must be had and lathes and tools of much greater magnitude." The plans that Gorham proposed to his father were a radical and risky undertaking: "To erect a large building for the purpose of dividing it with workshops for jewelers and similar trades, supplied with power, was, so far as we knew, an untried experiment. Wise heads predicted failure. To no extent had steam power been hitherto applied to the manufacture of Jewelry or

Gorham Manufacturing Company, manufacturer
Ice Bowl, 1866
silver, gilding
9 1/2 × 12 7/16 × 9 13/16 in.; weight: 2,600 g
1991.126.54; The Gorham Collection, RISD Museum; Gift of Textron Inc.

Silverware and—worse than ale, as the first whisperings of steam boilers to be placed in the heart of the city, strong objections were raised."[3]

A 110-by-40-foot lot on Canal Street was leased for 100 years, and plans to erect a four-story brick building were soon underway. Gorham negotiated a loan through a broker with Richmond Bullock, president of the Commercial Bank, who advanced sums as the building progressed until the total reached $9,000. While the building was under construction, the broker informed John that no further funds would be furnished. Not one to be deterred, Gorham went directly to Bullock and invited him to the building site so that he "could see for himself what I was doing with his money." Bullock found Gorham down in the basement with the workmen, building a part of the foundation for the 50-horsepower engine that would power the new building, run under the gangway to power the old building, and reach beyond to power other buildings. Gorham recalled, "I remember his pleased look."

The twenty-five hands then employed at Gorham would not yet fill the new building; the idea was to build beyond their current needs, renting both space and power to other businesses—mainly jewelers—until Gorham expanded to fill them. Power was made available to jewelers across the street, such as G. & S. Owen at 9 Steeple Street, by means of underground shafting connected to Gorham's engine.[4] Although Jabez was initially in support of the expansion, he withdrew from the business as the foundations were being laid in the summer of 1847. As sole proprietor, John oversaw the completion of the building in 1848; it soon filled with "good paying clients." This revenue would repay his debt to Bullock,

Considered combinations of mechanization and handwork translated original ideas into well-designed, artistically executed work.

who came to believe in the enterprise, loaning a total of $17,000.[5] John Gorham's gamble and contribution to the region's manufacturing development would be recognized before the end of the century: "The marvelous development of the Gorham Manufacturing Company is a potent illustration of the great results which competition, enterprise and mechanical genius have wrought in the industries of New England."[6]

With steam power installed, the next key to Gorham's growth and success was John Gorham's procurement of steam-powered machinery specifically engineered for making silver. He traveled to England and France in 1852, seeking Scottish engineer James Hall Nasmyth, who invented the steam hammer, which was patented in England in 1842.[7] Nasmyth agreed to adapt his steam hammer to power a drop press capable of forming silver flatware in a single mechanized strike, thus eliminating the physical labor of repeatedly raising the drop press. The arrival of this engineering endeavor in Providence not only marked Gorham as the first American silver company with a

Elmwood plant, 1892.

steam-powered drop press for the purpose of making silver wares but also entrenched the enterprising nature of Gorham into the next century. The company was built and grew upon the effective and profitable combination of systematic processes—both in terms of machinery and business—and original artistic talent. Interrelated ledgers documented inventory, casting and stamping dies, costing records, and silver control; along with photo albums, design drawings, and trade catalogues, they formed a complex network of organizational, promotional, and administrative tools that enabled continual expansion of scale, diversity of product, and technological advancement. An 1892 article recognized the necessity of Gorham's by then well-established modus operandi, stating, "Only the strictest system could push on this enormous amount of labor and conserve the profits."[8]

The general belief at the time was that silver manufacturers in the United States were primed to surpass those in Europe by placing the traditions of silversmithing inherited from Britain within the context of American industrialism. An 1868 article published by *Harper's New Monthly Magazine* clearly described the transformation from the 1830s norm of a shop to that of a manufactory, boldly claiming that "it may be laid down as a rule that whatever branch of manufacture can be profitably carried on in the United States on a great scale, we shall beat the world in it."[9] As to the advancement of the manufacture of silver in particular, the article noted the exponential advantage of the present Gorham manufactory that was "filled with ingenious machinery . . . which multiplies each man's productive power, and increased his ability to produce uniform excellence beyond computation."

The company was built and grew upon the effective and profitable combination of systematic processes—both in terms of machinery and business—and original artistic talent.

By 1860, there were about 150 men employed at the company, two stories had been added to the new building, and John had purchased the estate west of No. 12 Steeple Street from Jabez, occupying a considerable portion of it. A 156-page 1862 inventory ledger meticulously lists the entire contents of more than thirty rooms filled with machinery, tools, dies, gas fittings and pipes, workbenches, stock materials, and fixtures.[10] By 1875, approximately 450 Gorham employees occupied 69 rooms, and the manufactory had spread to the boundaries of North Main, Steeple, Canal, and Friend Streets in an area reported to be 140 by 200 feet.[11] In the same year, William Conant, a writer for *Scribner's Monthly,* toured the works, claiming, "After walking for half a day, and to complete exhaustion, I was congratulated on having seen a full half of the Gorham Manufacturing Company's establishment!"[12] He breathlessly described a bustling environment of myriad activities:

In the city of Providence, I have seen under one roof an entire block of

The Experimental Room at the Elmwood works, 1892.

buildings filled with shafting and belting from steam-engines of the largest size, connected by steam elevators and pipes throughout, for communication, illuminating and heating gas, air blast, live steam and exhaust steam, water hot, cold, hard and soft; machines of incredible ingenuity and efficacy without number; foundries for casting in iron, brass, silver, gold, and all other metals required; machine shops for every metal, and also for woodwork; blacksmiths' shops, rolling-mills, lathes drills, milling and planning machines; shearing, punching, shaping and embossing machines; lofty shops and ponderous machines for die stamping; large room devoted to melting and refining furnaces; to various metallurgical processes; to electro-plating and gilding; to photography; to metal spinning; to finishing by hand and machinery, in more stages, modes and apartments than could be carried away in memory; apartments in long succession, occupied by artist and draughtsmen, some by engravers, some by chasers, some by embossers, some by die engravers, some by dies hardener, some by tool makers, some by weighters and packers, some by fancy case makers in wood, morocco, velvet.[13]

By the time of Conant's visit, most Gorham employees specialized in different skills and processes, each working at a particular location within the facilities where the necessary equipment and resources for that task were housed. Although John Gorham hired skilled European silversmiths, the majority of his employees were Americans trained in specific silversmithing skills. An 1879 account of this division of labor notes at least twelve separate trades in which Gorham apprentices were trained.[14]

By the late 1880s, Gorham was operating at new heights, with a staff of 2,800. The need for larger facilities was realized, and a 30-acre plot of land was purchased in the Elmwood neighborhood of south Providence. Architectural plans were developed using the company's input regarding the features and layout of the buildings. The scale, modernity, scope, and self-sufficiency of the plans reflect Gorham's far-reaching goals, ambitions, and aspirations, with unalloyed recognition and respect for their employees' knowledge, capabilities, and needs. A company sales manual emphasized "the value which the Company has always placed upon the services of those who have grown up with it, for without the practical knowledge which comes only from actual experience in the more subordinate positions, the President and his advisors who arranged these buildings could never have properly appreciated the needs of the men and the business."

Since John Gorham's 1852 journey to England in pursuit of drop presses adapted for use with silverware, Gorham had debuted more than 115 flatware patterns. Located in the heart of the new complex, the Preparatory Room was described in an 1892 *Jewelers' Circular* as a space laden with heavy lines of shafting, powering a multitude of machines. Here is where "the heavy work is executed. Lumps of shining metal are rolled into sheets, and cut up and stamped into the forms of spoons, forks and other designs . . . the solid mass

Gorham Manufacturing Company, manufacturer
Bonbon Spoon, ca. 1893
silver with gilding and plique-à-jour enamel
5 1/4 × 1 15/16 × 9/16 in.
54.184; RISD Museum; Anonymous gift

Gorham Manufacturing Company, manufacturer
Coffeepot, ca. 1890
copper with silver and ivory
12 15/16 × 7 × 5 1/8 in.
84.161; RISD Museum; Mary B. Jackson Fund

of unshaped metal grows into beauty of form under the quick, sharp action of huge steel machines, which do their work with almost a human impulse."[15] Much of the machinery was designed and constructed by Gorham for their own specific needs.

Throughout the Gorham Manufacturing Company's existence, the dual respect for what came before and what was possible for the future was the foundation for their development and dominance of the silver industry. Their processes, ranging from administrative management and logistical organization to creative development and manufacturing methods, were recognized early on as bringing "the inheritance of an older and richer world to the quick and fertile genius of the new, and into that, comprehensive organization of all departments under one head, which gives a capital advantage to the American system of business."[16] The company was an American industrial leader, the epitome of the manufactory, a site where merchandise was produced for sale and for use through labor and machines. What the word *manufactory* often obscures, however, is that it "is not an easy thing to make a design which shall be at once delightful to the eye and convenient to the hand. . . . [N]o talent is rarer than this, and without it, all the mechanical skill, the perfect integrity, and the courageous enterprise of the Company would not have sufficed to rear so vast . . . an establishment."[17]

Elizabeth A. Williams is the David and Peggy Rockefeller Curator of Decorative Arts and Design, RISD Museum of Art, and the curator of Gorham Silver: Designing Brilliance 1850–1970, *which will be on view at the RISD Museum, Providence, RI (5/3/2019–12/1/2019), Cincinnati Art Museum, Cincinnati, Ohio (3/13/2020–6/7/2020), and the Mint Museum, Charlotte, North Carolina (7/25/2020–11/1/2020).*

1 This article is adapted from *Gorham Silver: Designing Brilliance* 1850–1970 (Rizzoli, 2019), which accompanies an exhibition of the same title organized by the RISD Museum drawn mainly from the RISD Museum's collection, as well as significant loans from collegial institutions and private collections. / **2** Information from John Gorham, notebook with handwritten history of Gorham, 1893; and John Gorham, handwritten history of Gorham, January 13, 1894, Gorham Manufacturing Company Archive, John Hay Library, Brown University, Providence, Rhode Island (hereafter GMCA). / **3** Gorham, handwritten history, January 13, 1894, GMCA. / **4** Louis W. Clarke, "Ye Ancient Jewelers of Providence, Events of a Hundred Years of Jewelry Making Described and Illustrated," in *The Manufacturing Jeweler* 35 (August 30, 1894), 209–10. The author thanks Peter DiCristofaro for this information. George and Smith Owen purchased the 9 Steeple Street lot and built a four-story brick building in 1847, the lower floors of which were rented to other jewelers. / **5** In 1848, $17,000 was the equivalent of about $545,000 today. / **6** "Silversmithing in America Part II, Gorham Manufacturing Co.—History and Development," *Jewelers' Circular and Horological Review* 19 (June 8, 1892): 3–8. / **7** John Gorham, diary of a trip to England and France, 1852, I.1 Gorham-Historical-Gorham Family, GMCA. / **8** "The Modus-Operandi of Electro-Plating in Silver," in the *Cincinnati Enquirer* (January 1, 1892); clipping of article in GMCA. / **9** "Silver and Silver Plate," *Harper's New Monthly Magazine* 37, no. 220 (September 1868), 433–48. / **10** Gorham Manufacturing Company, ledger, 1862. The author thanks Peter DiCristofaro for access to this ledger. / **11** "Manufacturing and Mechanical Industry," *Providence Journal,* May 19, 1871. / **12** William C. Conant, "The Silver Age," *Scribner's Monthly* 9 (December 1874): 202–3 / **13** Ibid., 202. / **14** J. D. Van Slyck, *New England Manufacturers and Manufactories: Three Hundred and Fifty of the Leading Manufacturers of New England* (Boston: Van Slyck, 1879), 295. / **15** "Silversmithing in America. Part III. Gorham Mfg. Co.—Description of the Works," *Jewelers' Circular and Horological Review* 20 (June 15, 1892): 3–8. / **16** Conant, "The Silver Age," 202. / **17** "Silver and Silver Plate," *Harper's,* 443.

Above:
Florentin Antoine Heller, designer
Mythologique sample service, 1894

Opposite:
Gorham Manufacturing Company, manufacturer
Whiskey Decanter, 1892
silver, glass
7 1/2 × 5 11/16 × 3 7/8 in.
1988.065; RISD Museum;
Helen M. Danforth Acquisition Fund

Jewelry: the Body Transformed

Metropolitan Museum of Art, New York City
11.12.18 – 02.24.19

By Andrea DiNoto

Gold Sandals and Toe Stalls, Egyptian, New Kingdom, Dynasty 18, ca. 1479–1425 BC. Gold. Sandals: 10 3/8 x 3 15/16 x 2 3/4 in. 26.8.148a-b, 26.8.185-189, 26.8.193–194, 26.8.198–199; The Metropolitan Museum of Art; Fletcher Fund, 1921-22

On any given day, items from the Met's magnificent cross-cultural jewelry collection—8,000 works—are found dispersed throughout seventeen curatorial departments: Egyptian, Byzantine, Oceania, Hellenistic, and many, many more. Normally, you could wear out your Keds trying to see it all in one day, but *The Body Transformed* offers the rare opportunity to view an extraordinary sampling in one multifaceted exhibition. Roughly 230 examples of jewelry and body adornments have been drawn almost exclusively from the Met's own collections with the aim of telling a story around 5,000 years of jewelry history. It's a "global discussion" that speaks not only of the sheer ubiquity of jewelry but also to the centrality of bodily adornment as both cultural and aesthetic artifact in myriad societies. But what *is* jewelry? The Met's curators are moved to pose the question, whose complex answer lies, they state, in jewelry's relationship to the "unique landscape of the body."

The Body Transformed is presented in six sections, each of which—in a challenge to viewers—has six subsections, in which items from various eras and cultures are intermixed. In "The Adorned Body," an introductory and dramatically low-lit gallery features several of the show's most thrilling pieces, each chosen for the particular part of the body it was designed for: a golden Egyptian diadem with gazelles and a stag; mosaic ear ornaments with winged runners from fifth- to eighth-century Peru; golden sandals and toe stalls from the tomb of the Three Foreign Wives of Thutmose III, and a

Gallery view of *Jewelry: the Body Transformed*

Shaun Leane, designed for Alexander McQueen, *Yashmak*, spring/summer 2000, edition 2017. Aluminum, Swarovski crystal. 2017.328a–c; The Metropolitan Museum of Art; Purchase, Friends of The Costume Institute Gifts, 2017

Eugene Pijanowski and Hiroko Pijanowski, *Oh I Am Precious #7* necklace, 1986. Mizuhiki (paper cord), canvas. 2007.384.46; The Metropolitan Museum of Art; Gift of Donna Schneier, 2007

Bronze-Age kinetic brooch with Archimedean spirals that conjure cosmic systems, as modern as it is ancient. "The Divine Body" displays jewelry created to endure the afterlife, with examples from the Met's inimitable Egyptian and Mesoamerican holdings. "The Regal Body" presents manifestations of status and power ranging from massive gold Hellenistic arm bands ca. 200 B.C. to a Benin bronze hip ornament from the sixteenth or seventeenth century. With "The Transcendent Body," the extravagance of Western parures is contrasted with the simplicity of the necklaces (shown on statues) worn by the Baule peoples of the Cote d'Ivoire. "The Alluring Body" gives deserved play to Japanese hair jewelry along with the "seductive" pearl, and the truly dazzling nineteenth-century Indian marriage necklaces known as thali. Finally, in "The Resplendent Body," the Met dazzles us with examples from its incomparable Mughal collection, together with pieces by the legendary jewelry houses of Castellani, Boucheron, Gaillard, Lalique, Tiffany & Co., and of course Louis Comfort Tiffany himself, whose 1904 *Dragonfly Hair Ornament* stuns with both its daring and craftsmanship. Would that it were shown worn on a Gilded Age coiffure!

To be sure, supplementary images—photos, paintings, prints, sculptures, and even spectrograph nudes—are supplied throughout, but, oddly, few pieces are displayed on actual bodies, i.e., mannequins, most likely as a result of restrictions of cost and space. One notable exception is Shaun Leane's armorial *Yashmak* (his transgressive metal version of a traditional Muslim undergarment) created for Alexander McQueen in 2000. Leane's famously shocking designs were a notable feature of *Savage Beauty,* the museum's 2011 blockbuster show devoted to McQueen, so it was no surprise to find his cast silver *Jaw Piece,* of rotted teeth no less, and a *Crown of Thorns* headpiece grouped with jewelry by Sam Kramer, Alexander Calder, Elsa Schiaparelli, and Elsa Peretti as examples of "Surrealist expressionism." These are among the several—though not nearly enough—mid-century and contemporary pieces that have been effectively included in *The Body Transformed,* often in juxtapositions of formal resonance with earlier examples. In the first gallery, for example, an eye-popping, outsized 1995 plastic bangle by Peter Chang—all bright colors and protrusions—is paired with a massive ca. 300–200 B.C. bronze Thai bracelet bristling with conical spirals. Similarly, William Harper's 1994 gold and enameled brooch, *Homage to Cy Twombly and Joseph Cornell,* is juxtaposed with a Celtic Bronze Age brooch, which might have been a formal inspiration. However, minus a wall caption (such would be unreadable in the darkness), what is the viewer to make of Myra Mimlitsch-Gray's ironically titled 1993 *Brass Knuckles,* constructed of gold-plated charms grouped with a massive fifteenth-century gold ring inscribed with the name of Pope Paul II and a typically eccentric, oxidized 2005 silver ring by Karl Fritsch set with rough diamonds?

It is in the closing gallery, in the subsection *Redefining Resplendence,* that the Met faces the conundrum posed by contemporary conceptual jewelry. Yes, resplendence—as normally thought of—resides in Mary Lee Hu's famed 1995 woven gold choker, in Daniel Brush's aluminum torque

of 2010–14, and in Eugene and Hiroko Pijanowski's show-stopping *Oh I Am Precious #7,* a 1986 neckpiece constructed of golden paper thread. But included here as well are four items with questionable relevance to the "resplendence" theme. Kiff Slemmons's 1992 *Sticks and Stones* breastplate made of sharpened pencils, a now-iconic conceptual masterpiece, references broken treaties with Native Americans. How to make sense of it displayed alongside Karl Lagerfeld's Chanel dress embroidered with chains and pearls? Likewise, resplendence is at its most secondary in the provocative necklaces by Simon Costin and Joyce J. Scott. Costin's 1987 *Incubus,* containing human semen, is the British artist's denouncement of what he views as ecclesiastical hypocrisy, while Scott's raucous beadwork assemblage *Night in the City* addresses issues of sexism, racism, and violence. Attai Chen's 2011 necklace made of paper, paint, coal, glue and linen, for all its strange beauty, is probably not "a take on a ruffled lace collar." Will Chen's ephemeral shards miraculously survive, one wonders, as does King Tut's funerary *Floral Collar* of real dried plants (on view in *The Divine Body* section)?

Apart from these few exceptions, *The Body Adorned* eloquently answers its own question: What *is* jewelry? But it begs another regarding the show's basically low-tech, teaching-moment design: Performative by definition, why was this eternal, dazzling and deeply human art form denied the animating effects of audio, film or video? Be grateful, in that absence, for the splendid catalogue, in itself a great performance of design and scholarship.

Andrea DiNoto writes on art, craft, and design

Thomas Gentille: Color Light Air

Gallery Loupe,
Montclair, New Jersey
11.10.18 – 12.08.18

By Bruce Metcalf

I used to think Thomas Gentille was a minimalist. The thought bothered me a lot. Minimalism is all about concepts translated into objects, but to me minimalist sculptures themselves are not particularly compelling. They are blank and boring, merely accessories to theory. If Gentille was a Minimalist, I was not interested.

I was so wrong! Gentille's fifty brooches and one necklace in his recent exhibition *Color Light Air* at Gallery Loupe prove him to be something else entirely. His forms may be pared down, but that sensibility and intention is not about illustrating an idea. His pieces are all about providing an exhilarating experience. One has to slow down and look closely, but the rewards are intense.

The show featured works from a number of series, both old and new. The necklace and many of the brooches were finished in Gentille's familiar eggshell inlay. There were irregular geometric forms in solid colors, which Gentille has been doing for years. But clearly Gentille is still experimenting: there were also four brooches in an eroded paint surface, as well as four brooches with a thick marble-dust finish that were new.

Gentille says that he tries to convey a certain energy in every piece. He complains that he finds Ellsworth Kelly's paintings dead, but feels that Josef Albers's color studies buzz with vitality. And he recounts how he used to be unable to look at Mondrian's *Broadway Boogie Woogie* for more than a minute: the sheer dynamism of the painting overwhelmed him, and he had to look away. It's precisely that dynamism that he wants in his own work. His insistence that jewelry should communicate a sense of energy separates him from doctrinaire minimalists like Judd and de Maria. The best of his work crackles with a kind of electricity, which comes from the object, not the idea.

What excites me most about the work in this new exhibition is Gentille's attention to detail. A horn onlay, vaguely transparent, wraps over the edge of a brooch to reveal the laminations in the plywood beneath. A blue brooch secured with four stainless nuts reveals dots of orange paint on each screw end. The color on the back of a brooch wraps around one edge, telegraphing what ordinarily would be hidden. You have to look closely before these details register, but when they do, it's thrilling. Such details are on the edge of perception. It's a pleasure only possible in jewelry, where small scale is the norm.

After I saw the exhibit, I went back and looked at the catalogue of Gentille's 2016 retrospective at the Neue Sammlung in Munich.[1] It was easy to see how he continues

Thomas Gentille, *Brooch.* Eggshell inlay. 49 × 51 × 53 mm

Thomas Gentille
Brooch
plywood, transparent and translucent acrylic, lacquer, resin, stainless steel, nylon, resonated paper, air
100mm × 88mm × 20mm

Thomas Gentille
Brooch
plywood, lacquer
5 × 2 3/4 × 5/8 in.

longstanding series, but with new variations. One series consists of rectangular painted panels overlaid with equally rectangular sheets of frosted Plexiglas. In the older work, the edges of the panels were always parallel to the edges of the Plexiglas, making for rather static compositions. In his extensions to the series featured in this new show, Gentille has the edges of the frosted surfaces overlap the colored blocks at angles. Not only are the new brooches livelier, but as the Plexiglas crosses over the paint, it modifies the color behind in a subtle way. It's not a noisy effect, but it sure is memorable.

Many of the brooches are made from plywood about a half an inch thick. They have a chunky, corporeal quality, like little bodies. One of my favorite brooches consisted of a blocky "L" form that projects off the body. The form is blunt, but its eggshell onlay with blue background is almost impossibly delicate. The contrast between form and surface is a bit startling, bordering on aggressive. The tension is what makes the piece work so well.

All of Gentille's jewelry is rigorously abstract, absolutely devoid of representation, semiotic content, or overt metaphor. You might think that Gentille makes no concessions to wearability, but that's not so. He thinks constantly about weight, so the necklaces are comfortable, and the brooches don't tug on fabric. All his jewelry is surprisingly light. It takes real skill to pull this off, even though it might be invisible to the casual viewer.

I hesitate to use the word "master," because the word carries implications of unimaginative craftsmanship and a domineering attitude. Nonetheless, Gentille is a true master. His craft is impeccable, but that's not what makes his work sing. It's how well and how carefully he thinks. Nothing escapes his attention. Everything is considered, everything is resolved. Thomas Gentille's thoroughness is the result of decades of experience, trial and error, experimentation. It all comes together in every single piece, and it *cannot* be faked. Here is a jeweler at the height of his powers, and one is fortunate to stand in the presence of genuine mastery.

Bruce Metcalf is a jeweler based in Philadelphia.

1 Angelika Nollert, et al, *Untitled. Thomas Gentille: American Jeweler* (Stuttgart: Die Neue Sammlung/ Arnoldsche Art Publishers, 2016).

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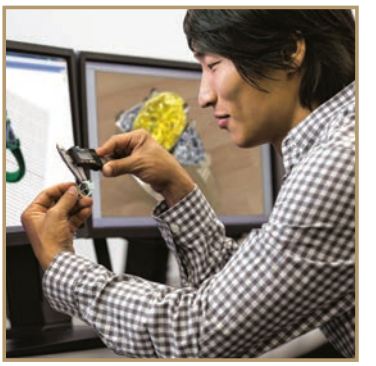

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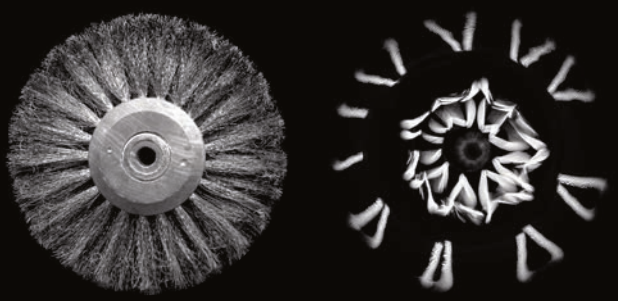

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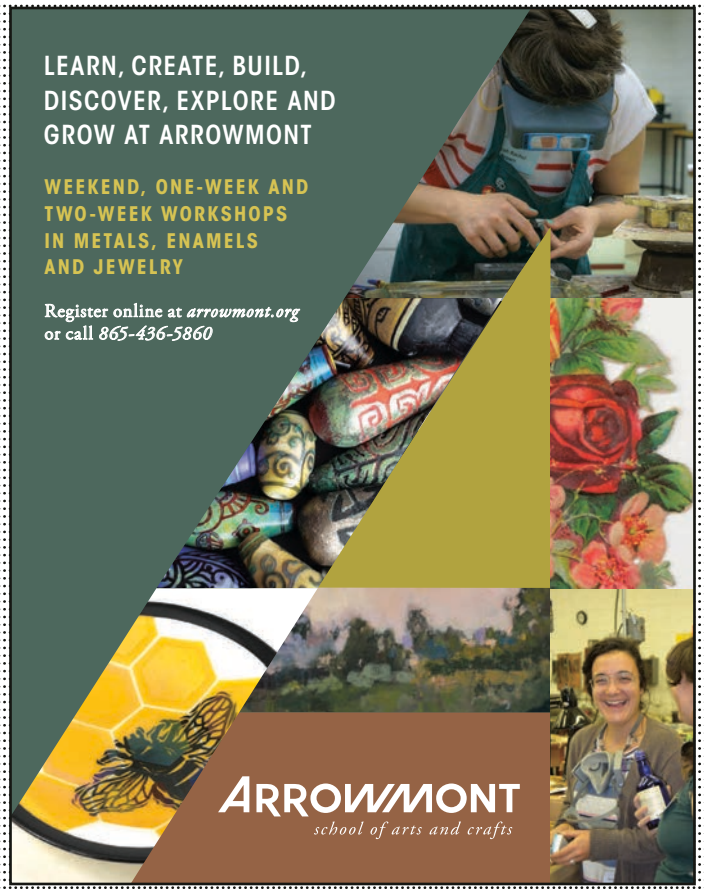

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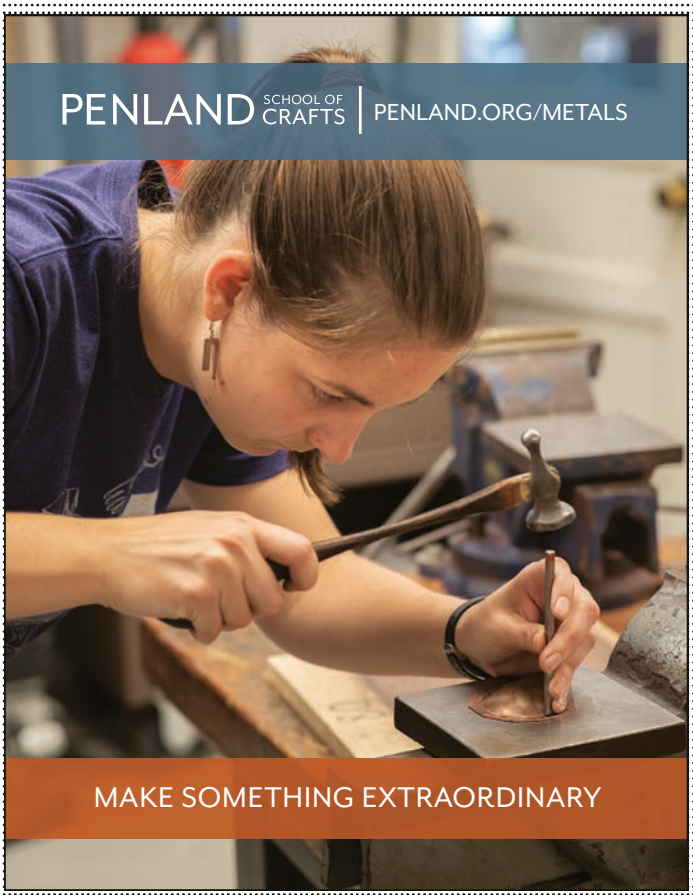

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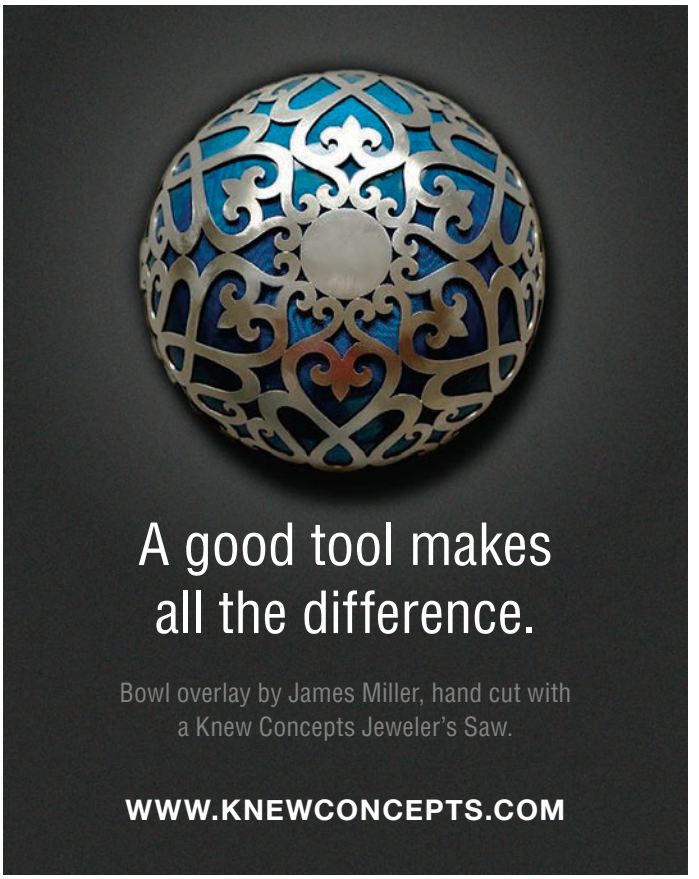
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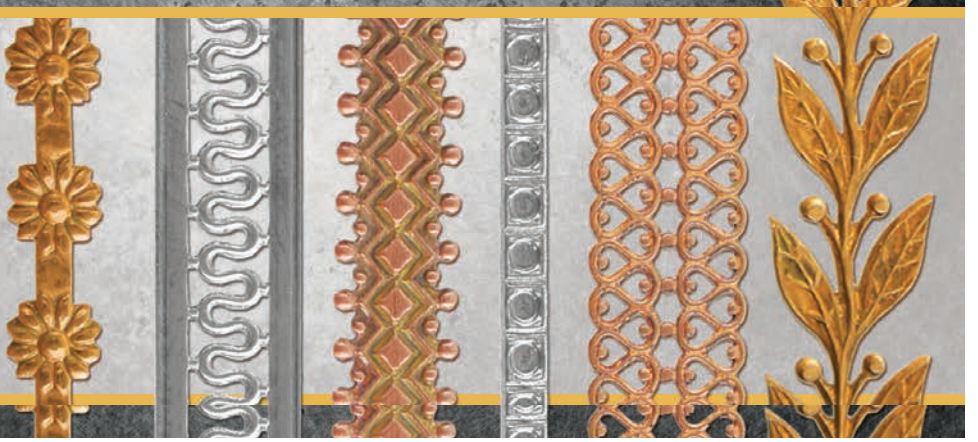

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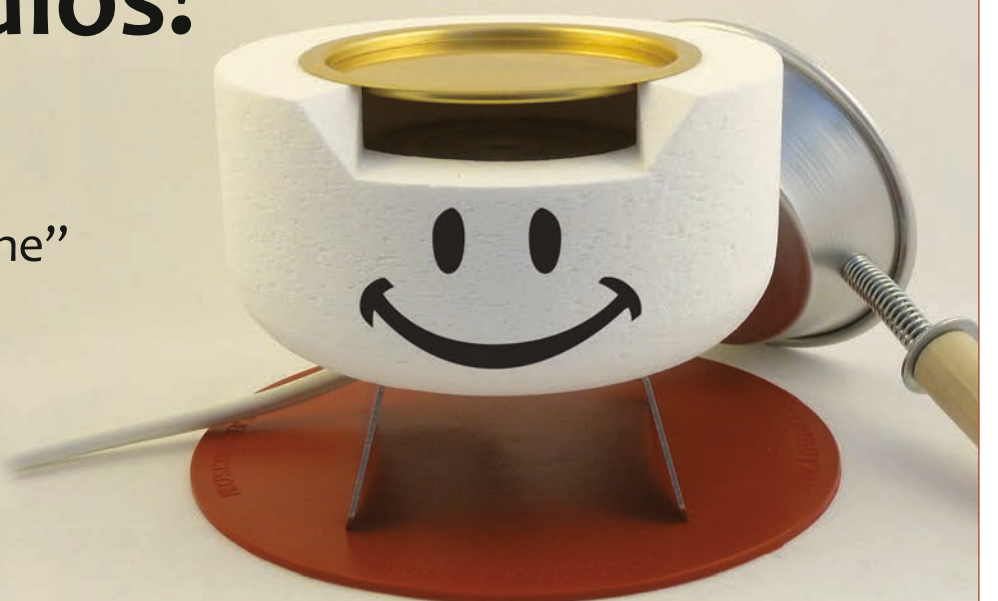

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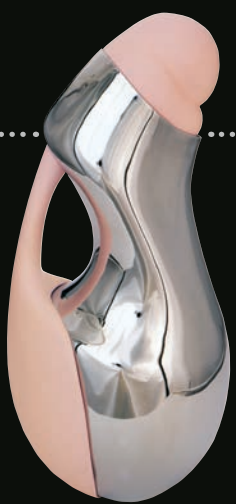

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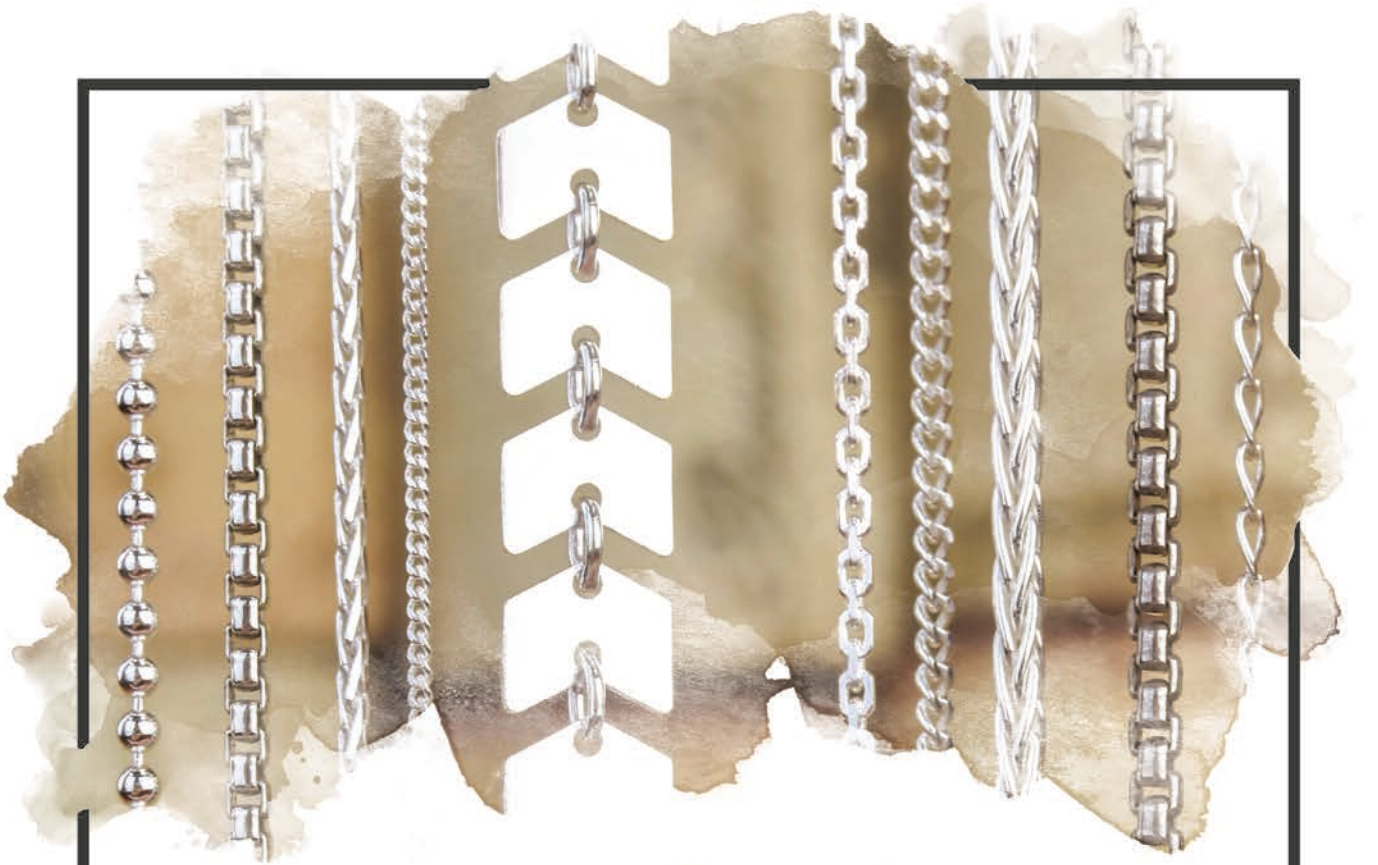

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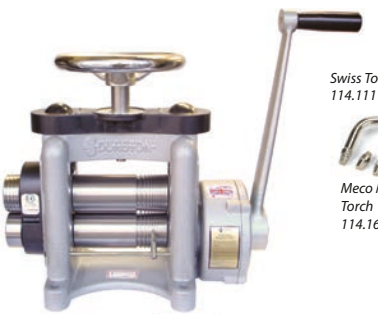

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METALSMITH TECH

CONTENTS

4 FOREWORD

10 THE NEXT GENERATION

Talking CAD at SCAD

As it keeps pace with industry and digital innovation, SCAD prepares students for a world of creative possibilities. *Andrea DiNoto*

14 TECH TOOLKIT

In/Tangible Tools

Jeffrey Clancy

16 THING OF THE PAST

Plumbing the Depths: Haptic Research, Historic Tools

Kendall Reiss

TECH ELEMENT

20 Hidden Powers: Putting Clasps at the Center of Jewelry

Two jewelry makers shine light on an oft-overshadowed functional element: the clasp. *Anna Tabakhova and Alison Antelman*

TECH TALK

24 Translating Jewelry Techniques to Larger Scales

When it comes to Eastern repoussé, size is no object for this artist. *Victoria Lansford*

TECH TEACH

28 Utilizing Digital Processes for Layout and Design Transfer

Straightforward steps for augmenting analog studio practices with digital tools. *Frankie Flood*

Cover:
- **Michael Boyd** *Ruby Necklace*, 2017 (see p.22)
- **Casey Newberg** *Birth pitcher*, 2018 (see p.29)
- **Victoria Lansford** *Turtle Media Screen Doors*, 2017, (see p.24)

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In biological terms, adaptation is defined as a change that improves an organism's suitability for its environment. Presumably, survival is the measure of successful adaptation. Whether we define ourselves as makers, educators, thinkers, or all of these and more, we engage with adaptation by solving problems, using tools, streamlining production methods, and incorporating new technologies into our practices.

When commissioned to create door panels and a room divider for a bespoke yacht, Victoria Lansford adapted her Eastern repoussé tools and working methods to accommodate a larger scale. In "Hidden Powers," Alison Antelman and Anna Tabakhova showcase clasps that are both highly technical and aesthetically suitable to their environments. When it comes to the relationship between makers and their tools, articles by Kendall Reiss and Jeffrey Clancy speak to two different ways in which one can change the other. In addition, this issue is bookended by perspectives on adapting to digital technology. In "Talking CAD at SCAD," Andrea DiNoto interviews Jay Song, Chair of Jewelry at Savannah College of Art and Design, about preparing tech-savvy students for creative careers. And the first article in a series by Frankie Flood lays the groundwork for integrating digital and analog studio practices.

Now entering its second year, *Metalsmith Tech* is a platform for exchanging information and ideas. Such exchanges rely on the participation of you, the readers. I am here as a willing and eager collaborator, and invite you to share your ideas, proposals, critiques, and praise with me: editor@snagmetalmsith.org. I look forward to hearing from you. ***—Adriane Dalton, Interim Editor***

The mission of *Metalsmith Tech* is to focus on techniques, processes, educational philosophies and ideas, professional development topics, and new technology in the field of jewelry and metalsmithing. The magazine will include both contemporary and historical references, highlighting a diverse range of approaches to jewelry design and metalwork, including professional practices, creative influences, and new trends.

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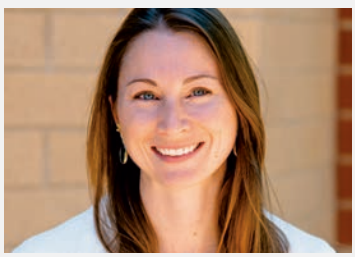

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Opposite:
Process image and finished work by Seung Jeon Paik (SCAD MFA 2018).

THE NEXT GENERATION

Talking CAD at SCAD: A Conversation with Jay Song, Chair of Jewelry, School of Fashion, Savannah College of Art and Design (SCAD)

A curriculum that mixes tradition with innovation prepares the next generation of tech-savvy jewelers for a rapidly changing field.

BY ANDREA DINOTO

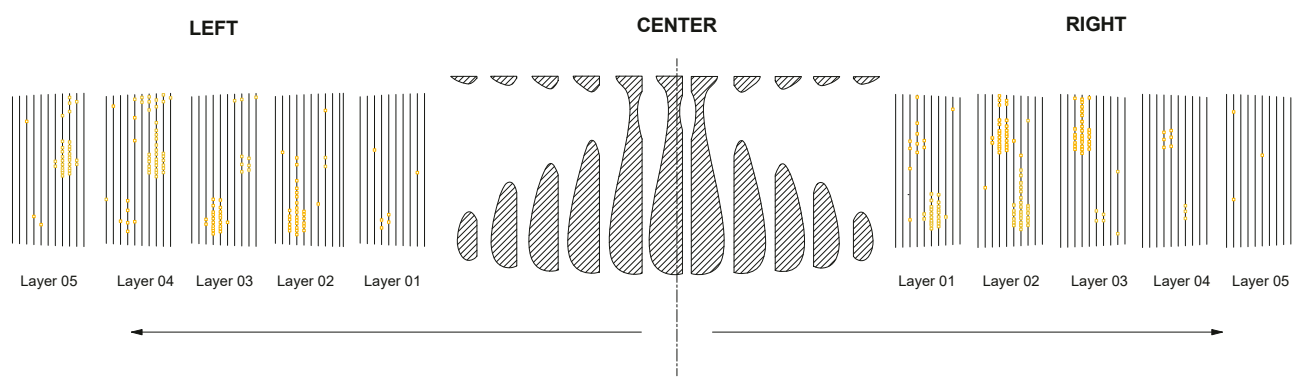
Jay Song was born and raised in Daejeon, South Korea. She has a bachelor's degree in law from Hannam University in Korea and an MFA in Jewelry from Savannah College of Art & Design (SCAD). She has been a professor in the jewelry department at SCAD since 1999, when she became its chair. Her work in metal and mixed media has been exhibited internationally in galleries and museums in China and Korea, and throughout the United States. Established in 1978, SCAD has a unique presence in its historic city. With no centralized structure, the college houses each of its schools and related programs in repurposed buildings—more than thirty of them—throughout Savannah. Each is equipped with state-of-the-art technology, ensuring students will graduate with highly competitive skills in their chosen field.

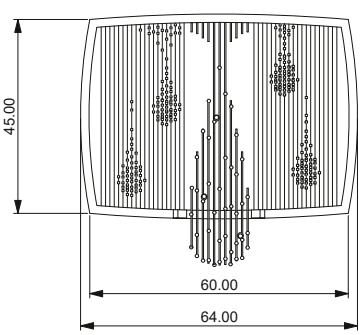
You have been updating the SCAD curriculum now for ten years, much of it in the area of technology. What are the major trends in jewelrymaking today?
Digital drawing, 3D modeling, 3D scanning, 3D precious metal printing, and parametric and generative design are all pervasive and widely used in the industry as creative tools. Digital fabrication enables us to produce and realize design concepts that were impossible by traditional methods. There is unimaginable potential in the world of digital manufacturing.

How does SCAD prepare students for jobs within the jewelry industry that may not involve actual making?
Our mission is to prepare talented students to become innovative leaders in their industry. SCAD's jewelry program is the largest degree-granting program in the country. The curriculum is built on fostering creative thinking strategies, innovation in design practices, and a strong foundation in obtaining skills to fulfill diverse student needs. Our students have access to advanced industry equipment including computerized engravers, laser welders, laser cutters, 3D printers, and 3D milling. In addition, the jewelry computer lab is certified as a Rhino Fablab by McNeel Group, allowing students to obtain official Rhinoceros certification. Also, our innovative studio, SCADpro, pairs jewelry students and alumni with industry leaders (Fossil, Ernst Benz, and Swarovski, for example) to learn how to propel a prototype to market, create sustainable companies, and launch their projects, all within one year.

For those students who aspire to become studio artists, how are they guided toward developing an individual aesthetic?
Whether students desire to become studio artists, commercial designers, or product developers, our expectations for them remain the same: an emphasis on the development of new ideas and possibilities through experimental materials, and obtaining advanced knowledge in technologies to meet industry's new demands. I must say that I do not place a hierarchy on our students' dreams for a career, whether it is to create products for clients or for themselves as artists. The first stages of concept development involve writing research papers, sketching and rendering, sample making, and building both a physical and digital process book leading to the final formal presentation. First-quarter seniors are required to submit at least 200 concept sketches and finished renderings, 20 pages of a physical process book, a public presentation, and 40 pages of an e-process book. To further stimulate creativity, SCAD offers students

I truly believe we should embrace the new reality of jewelry and prepare students to accept that the field extends beyond the bench and drafting table.





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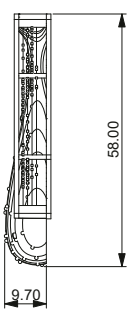

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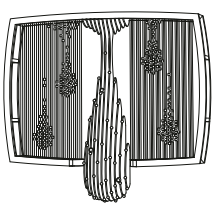

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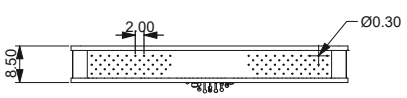


TOP

the opportunity to study at our global campuses in Hong Kong and Lacoste, France. Connecting theory with practical experiences in the field through partnering with established artists pushes our students to further evolve as studio artists. I also promote and sponsor students to enter national and international competitions and exhibitions. SCAD is the only academic institution to be invited to top-ranked national shows, including the Smithsonian Craft Show, Philadelphia Museum of Art Craft Show and American Craft Council Show, to exhibit and sell their own work.

Recently, the SCAD Museum of Art hosted the exhibition *Jewelry of Ideas: The Susan Grant Lewin Collection.* How did students respond to the objects on display?
The installation, curated by the SCAD exhibitions and design teams, featured the jewelry in a black-painted gallery under large Plexiglas domes to great dramatic effect. The students' first impression was that the printed image is no substitute for the real thing. Many of them had only seen the exhibited jewelry in books, especially the famous Otto Künzli bracelet *Gold Makes You Blind* and Gijs Bakker's *Blinker Brooch.* It was important for them to see these pieces in person.

The use of alternative and/or ephemeral materials is well established in the art jewelry world. What is your view of their use vis-a-vis preservation? Wearability?
When jewelry artists started to question and redefine the very notion of jewelry, everything was challenged. Jewelry as art, I do not think, is concerned with commercial wearability, nor is preservation any longer important. In a rapidly changing world, we exist virtually via social media. Augmented reality, as well as virtual reality, have become marketing tools that enable customers to experience products in a new way. In the near future, even the physicality of objects will be tested.

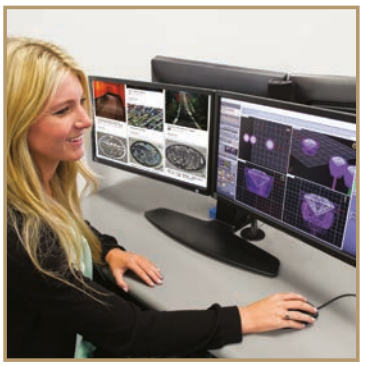
SCAD's jewelry department is part of the School of Fashion. How do students from these two fields interact in the creation of projects?
Each fall quarter in the School of Fashion, senior students from our accessory, fashion, fiber, and jewelry programs meet with each other to explore collaborative opportunities. Many of these collaborations are featured in our annual SCAD fashion shows in Savannah, Atlanta, Hong Kong, and Lacoste France. Most students use their digital portfolios, personal websites, Behance (a showcase for creative work), Instagram, etc. to pitch their concept to the potential partners.

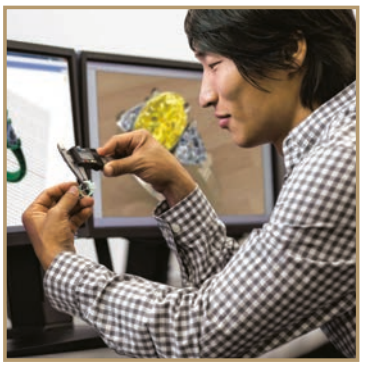
SCAD proudly states that 100 percent of graduates find employment. How is this determined?
The Career and Alumni Success (CAS) staffs work closely with current students and alumni regarding their careers. Each year, nine months after graduation, CAS reaches out to each graduate to report on their current job situation. Based on this data, we know that the SCAD jewelry department has a 100 percent employment rate in the jewelry field, and that 99 percent of Spring 2017 SCAD graduates were employed, pursuing further education, or both within ten months of graduation. Our graduates are employed by prestigious companies including Chanel, Tiffany & Co., David Yurman, Swarovski, Fossil, Michael Kors, Kate Spade, Coach, Haskell Jewels, Signet, Camuto, FAF/Catherine Stein Design, Alexis Bittar, Lucky Brand, John Hardy, Anthropologie, and many more.

What future technologies do you envision for jewelry?
As an educator, I truly believe we should embrace the new reality of jewelry and prepare students to accept that the field extends beyond the bench and drafting table. While traditional jewelry is holding its position stronger than ever, the virtual aspect will continually push us to accept its presence. The war between physical vs. virtual is coming, whether we like it or not. In the near future we could have a digital jewelry box; an inventory, if you will, to adorn our virtual identity.

Andrea DiNoto writes on art, craft, and design.

Process images and finished work by Jennifer Lee Hallsey, Professor of Foundation Studies and Jewelry at SCAD.





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Seth Gould
Jeweler's Saw
steel, brass, mahogany
11 × 4 × 1.5 in.
Photo by Seth Gould

TECH TOOLKIT

In/Tangible Tools

The gift of a tool marks a meaningful relationship between a teacher, his student, and their community.

BY JEFFREY CLANCY

As an educator, I want students who are willing to be challenged, and productively challenge me in return. This type of student is rare. However, while teaching at Maine College of Art in Portland from 2006 to 2009, I had the privilege of working with one: the artist Seth Gould.

During his final semester, a few months before his undergrad thesis show, Seth said he wanted to work in forged steel and asked what I knew about it. I said, "Seth, strike while the iron is hot!" Then I did what I always do when guiding a student wishing to work outside of my immediate expertise: I called a friend. I explained the situation in this case to David Clemons, an artist who is knowledgeable about blacksmithing, and by the end of the week, a FedEx box arrived stuffed with technical information. I gave the parcel to Seth. Over the weekend, he built a small gas forge and began to teach himself blacksmithing, making experimental samples and completing technical exercises. By May, he presented a new body of work for his thesis that was well designed, conceptually thoughtful, and beautifully executed in material and technique.

I wanted to give Seth a token of appreciation, admiration, and encouragement for all of his hard work and courage. Again, I called David, and asked him if he could get in touch with his former blacksmithing mentor William Bastas at Austin Community College, who makes beautiful hammers. I have a few of my own, and wanted to purchase one for Seth. A few weeks later, an oddly weighted FedEx box arrived, holding a loosely wrapped, handwrought, 2.5-pound forging hammer. Missing from the box was an invoice. I gave the hammer to Seth and explained how I received it, and how this is how this community works: use it, and give back to the community that has just welcomed you.

Seth's tools are dependable, balanced, aesthetically distinct, exceptionally crafted, highly sought after, and an absolute pleasure to use.

Seth Gould gives back every day, and anyone who knows him will agree. Not so long ago, a graduate student asked me, "What do you know about blacksmithing?" He ended up spending a weekend working in Seth's shop in Penland, North Carolina. Seth makes work that is phenomenally crafted, insanely technical, and thoroughly researched with rigorous dedication, fearless curiosity, and uncompromising passion. Seth also makes hand-forged tools, and I own quite a few. I have hammers and measuring, marking, and forming stakes. I even have his amazing bottle opener that was both the punch line—and the solution—to a horrible but hilarious incident. Seth's tools are dependable, balanced, aesthetically distinct, exceptionally crafted, highly sought after, and an absolute pleasure to use. I lend them to students whom I know will appreciate the transfer of knowledge, energy, skill, preservation, and persistence from Seth's hand to their own while using them. For me, these tools are enhanced because they embody something intangible. I was once a mentor to Seth, and I will continue to use his tools to make my work.

Jeffrey Clancy is an artist and Assistant Professor in the Art Department at the University of Wisconsin-Madison.

Clancy's personal collection of tools made
by Seth Gould (http://www.sethgould.com)

THING OF THE PAST

Plumbing the Depths: Haptic Research, Historic Tools

A collection of historical tools catalyzes artistic discovery.

BY KENDALL REISS

I have always been enamored with the aesthetic qualities and haptic properties of tools and functional objects. Old tools that are of the hand—showing their history and age through wear markings, or a green patina forming on bronze fittings—have a story to tell. It's this feeling that has drawn me to Coggeshall Farm, a relic of Rhode Island's past. Situated atop a gently rolling hill above a picturesque salt marsh known locally as Mill Gut, the farmhouse on this forty-eight-acre site dates between 1785 and 1799. Now a living history museum, Coggeshall exemplifies the Federal period in American history. Outbuildings on the farm include a blacksmith shop and a wood shop, and an animal barn for the resident sheep and goats was built much later, after Coggeshall was founded as a museum in 1973. There is a stone pump house adjacent to Mill Gut with a vista across the marshy pond to the three-arched stone bridge that spans the mouth of the gut, which empties and fills with the waters of Narragansett Bay.

I grew up less than two miles south of Coggeshall, on Poppasquash Point. The landscape, coastline, meadows, hand-hewn fences, and stone walls factored heavily in my childhood explorations, knowledge of place, and understanding of my own identity. As a maker, educator, and thinker, I am continually aware of the connection between the mind and the hand, and how one falls into a rhythm of making. Tools are integral to this relationship; they allow me to achieve this state of flow, akin to meditation, while in the workshop or at the bench. They embody human thought processes and methods for solving problems. Historic tools provide a lens into these notions in the past, even as many tools still in use today are little changed from their original stone or bronze age designs.

The landscape and hand-built features of Poppasquash Point have long served as threads of inquiry for my artistic practice. During graduate school at the Rhode Island School of Design (RISD), I made plaster molds from shards of beach glass and objects collected there, then cast them as porcelain ruins. I was captivated by the idea that these broken punch cups and plates may have first been used on the tables and in the hands of my maternal ancestors.

This erasure of the past is endemic to Poppasquash Point. The peninsula of land on which Coggeshall Farm Museum is set, in what is now the town of Bristol, was home to the Wampanoag Native Americans before 1680. It was also a major site in King Philip's War, a conflict between Metacomet, the Wampanoag sachem (chief), and early colonists; Metacomet was executed here by the colonists in 1676. As I have grown to learn the truth of this place, I have trouble in reconciling my love for it with its problematic history.

Right, top:
Blacksmith shop at Coggeshall Farm Museum, August 2018.
Photo: Simone Schiess

Right, bottom:
Stone pump house adjacent to Mill Gut at Coggeshall Farm Museum.
Photo: Simone Schiess

Opposite page:
Hammers in the blacksmith shop at Coggeshall Farm Museum, August 2018.
Photo: Simone Schiess

Tim Bornstein also fell in love with the landscape at Coggeshall. A professor of law and industrial relations at the University of Massachusetts Amherst, Bornstein became fascinated by the aesthetic value of old tools, the hand of the maker, and historical objects made from these tools. In 1992, he decided to donate his collection of more than 2,000 historic tools to the museum. To Bornstein, Coggeshall not only felt like the right place for these objects because of its educational mission, but also because these tools could be handled, and when appropriate, used.

I learned of the Tim Bornstein collection from a friend who told me about a handplane made from whalebone on view at the museum. During my first visit to the collection, I came across a cast-iron mold for a plumb bob with very little information attached. The mold has a satisfyingly heavy weight to both of its halves; the cast iron has an aged patina on its surface; and the negative space inside the mold reveals many knicks and marks, yet undeniable simplicity and grace.

Metrology is the scientific study of weights and measures. A plumb bob, or plummet, is a conical weight that is usually pointed at the bottom end. Plummets hang from string and are used to determine a vertical reference line (plumb line). They date back to antiquity, yet are still used today, and can be used to think conceptually about weight—not only a physical load, but also an emotional or mental heaviness. After gathering permissions to use the mold for a project, my initial research began by exploring objects from ancient Egypt and Nubia at the Museum of Fine Arts, Boston (MFA), trying to gain historical context and a better understanding of the Coggeshall mold. I was able to handle ancient Nubian and Egyptian plummets made from granite, sandstone, limestone, and unfired mud. I felt an uncanny, mystical feeling, holding an object that another human formed in their hand from a lump of earth nearly 3,000 years ago. Plummet amulets made of hematite and other mineral-rich stones were placed in mummy wrappings

As a maker, educator, and thinker, I am continually aware of the connection between the mind and the hand, and how one falls into a rhythm of making.

Plummet, Egyptian,
Old Kingdom, Dynasty 6,
2323-2150 B.C.
mud
30 5/16 in. long
13.3457; Museum of Fine
Arts, Boston; Harvard
University - Boston Museum
of Fine Arts Expedition
Photo© Museum of
Fine Arts, Boston

in ancient Egypt, as the Egyptians believed these talismans would bring balance to the deceased in the afterlife following the divine order of Ma'at.[1]

For me, what's so appealing about the Coggeshall plumb bob mold is the satisfying roundness of the object when cast into a positive form. I looked at other objects from Egypt and Nubia: weights for gold, a wooden arm balance for a scale, and a bell. The bell came from a royal cemetery in the ancient Nubian city of Kush. Unique because of its material—silver, which was extremely rare—it would have been reserved only for high-ranking members of society.

In his book *A History of the World in 100 Objects,* Neil MacGregor, former director of the British Museum, includes a bronze bell from ancient China. He writes, "At the core of the teachings of Confucius was the fundamental need for every individual to understand and accept their place in the world. It was perhaps in this spirit that sets of Chinese bells took on such philosophical importance—reflecting the diversity but also the harmony that's created when each different bell is

Cast-iron mold for a plumb bob, Coggeshall Farm Museum

perfectly tuned and played in its proper sequence… To produce perfect tones they had to have absolutely standardized shapes, and the consistency of these shapes meant that the bells could also be used to measure standard volumes. And as the amount of bronze in each one was also carefully controlled, they could just as well provide standard weights."[2]

From the cast-iron plumb bob mold, I cast bronze bells that will become a permanent installation at Coggeshall Farm.[3] Placing the bells back into the landscape there creates a tangible connection to the site where the idea for the work began. Like Bornstein's tool collection, hopefully these objects will serve as an invitation to interaction. The bells will not have internal strikers, but will require a hammerlike tool and human interaction to sound. Programming around this project will invite visitors to look at this landscape through historical tools. We will fire up the forge in the blacksmith and use the power of the antique billows to strike hammer heads for the bells. The antique draw horse will be used to create handles for the hammers. Coupled with iron heads, they will become the tools that activate the bells to ring out.

At the core, this project is about how access to historical tools allows the artist a new lens of inquiry. Working with tools like the plumb bob mold is a form of haptic research, which is some of the most important work we do as object makers. It is how we come to know the world. Tactility transcends time; a utilitarian mold from the 1800s is put back into service in 2018 and dialogues with ancient Nubia. Through tactile interaction with the bells at Coggeshall, people can think deeply about their own connection to this place, the tools that were used here, and the weight of its history. The sounding of the bells is an attempt to offer solace.

Tactility transcends time; a utilitarian mold from the 1800s is put back into service in 2018 and dialogues with ancient Nubia.

Kendall Reiss is an artist, gallery owner, and Professor of the Practice at the School of the Museum of Fine Arts at Tufts University in Boston.

www.kendallreiss.com

1 E.A. Wallis Budge, *Osiris and the Egyptian Resurrection,* Volume 1. New York: G.P. Putnam's Sons, 1911 (309). / 2 Neil MacGregor, *A History of the World in 100 Objects*. New York: Penguin Books, 2013 (193). / 3 This project is supported in part by a grant from the Rhode Island State Council on the Arts. A selection of tools from the Tim Bornstein collection will be displayed alongside Reiss's cast objects from the plumb bob mold, as part of *Seeds of Inspiration,* an exhibition at the Bristol Art Museum, 10 Wardwell Street, Bristol, RI, from March 22–April 28, 2019. Installation of the bells and workshop to forge strikers will take place at Coggeshall Farm Museum, 1 Colt Drive, Bristol, RI, in June 2019. This project would not be possible without cooperation from the following individuals and organizations: Tim Bornstein, Eleanor Langham, McKayla Hoffman, Steve Lake, Coggeshall Farm Museum Board of Trustees, Bristol Art Museum, The Bristol Statehouse Foundation, Rhode Island State Council on the Arts.

Cheryl Swartz
Mesh Bracelet, 2000
Mesh: .999 silver and 22 karat gold; clasp: sterling silver with 22 karat ball on latch, citrine
7 1/2 × 1/2 in.
Photo: Steve Bigley

TECH ELEMENT

Hidden Powers: Putting Clasps at the Center of Jewelry

BY ANNA TABAKHOVA AND ALISON ANTELMAN

Even though most necklaces and bracelets wouldn't function without a clasp, closures are rarely the focus when writing or thinking about jewelry. Both forgotten and ubiquitous, clasps are both a necessity and an aesthetic opportunity. The creative jeweler can create clasps that are an integral component of an object's design, whether hidden in plain sight, or exposed with grandeur as both fastener *and* ornament. As a historian of clasps in jewelry (Anna) and a metalsmith and clasp teacher (Alison), we offer an exploration of the art of clasps today, through the examples of a variety of artists who show us the strong connections between contemporary and ancient closures.

A PERSONAL JOURNEY THROUGH CLASPS
By Anna Tabakhova

In 2005, I first discovered a bayonet clasp set on both sides, which was thus interchangeable and piqued my curiosity. Since then, I've conducted an international search for as many photographs and examples of clasps as possible. In 2013, the Musée des Arts Décoratifs in Paris invited me for a lecture on clasps. The interest was so great, I decided to write a book. Of the twenty-two museums I approached, half opened their collection to me, or commissioned special photos for the study. After four years of study, my book, *Clasps, 4,000 Years of Fasteners in Jewellery,* was published in 2017 featuring 300-plus photos and examples of work from 30 countries, representing 4,700 years of the history of clasps.

I hope my research on clasps across millennia inspires more metalsmiths and jewelers throughout the world, and gives them "the taste for clasp-making." Today's concerns about clasps are the same as they were 4,000 years ago. Did you know that 3,500 years ago the first pendant clasps and removable clasps already existed in Egyptian jewelry? Egyptian goldsmiths were facing the same question as today's jewelers: "Shall I hide or show the clasp?" Even in antique jewelry, the fundamental challenge in making clasps is to provide function and beauty at the same time. There only so many technical clasp solutions, and most of today's clasps are variations of original ancient fasteners—albeit very creative ones!

There is something unique about American clasps. My attention was first drawn to American costume jewelry of the twentieth century, which primarily featured box clasps, push-in friction clasps, two-sided sliding clasps, snap clasps, screw clasps, foldover box clasps, and interchangeable clasps. And through my travels, I have noticed that interest in the U.S. in handmade clasps continues to blossom. During a 2018 trip to San Francisco, Berkeley, and Pueblo, Colorado, I visited two exhibitions that presented a wealth of clever and beautiful mechanisms: some technical declinations of antique clasps, and other clasps that were well integrated into the design of the necklace or bracelet.1 There was a box-shaped clasp similar to those found in Egyptian jewelry, as well as some wonderful interpretations of hook-and-eye and toggle clasps. Some jewelers, designers, and metalsmiths "reinvent" antique clasps, unaware

Richard Salley
Twins (opened front and closed back), 2018
Chalcedony, rooster tail agate, sterling, custom clasp, 18-in. handmade chain
2 × 1 3/4 × 1/4 in.
Photo: Eric Smith

that they were invented millennia ago. One purpose of my book is to give artists the tools and inspiration to create their own clasps.

ARTISTS AND THEIR CLASPS
By Alison Antelman

A well-thought-out and integrated clasp can make a handmade piece into a work of art. The idea of making all parts of the jewelry was instilled in me at the early stage of my education in metals, when I took a mechanisms workshop. Aside from learning the skill at hand, the challenge provoked a curiosity to go further into the exploration of a design, pushing me to that uncomfortable point between failure and invention. I never consciously thought that I *had* to make my own clasps; I presumed it was part of the piece, a natural design element with functional necessities. Some clasps are simple hooks customized with a stone; others are more complex, fabricated to fit within the motif of the jewelry. For me, it is the design that dictates the elements necessary to make a complete piece of jewelry.

Both forgotten and ubiquitous, clasps are both a necessity and an aesthetic opportunity.

It is very satisfying to hear the click of a box clasp closure or the snap of a latch on the safety feature. Closures are an important aspect of the functionality of jewelry; they must be comfortable to use, and secure. Clasps usually take a back seat to the piece itself; yet a handmade clasp brings the work to a higher level. I tell my students that making a clasp is not necessarily difficult, it's just time-consuming. When teaching a clasp workshop, I want my students to think kinetically about form and function. I teach two styles of clasps; however, the world of connections in jewelry is infinite.

Over four millennia, metalsmiths have endeavored to make clasps that are both useful and beautiful. The claspmakers featured here share a sense of obligation to the wearer, an obsession with quality and functionality, and a sense of playful exploration along with that of discovery. They are tinkerers, inventors, and innovators, channeling their ancient Egyptian predecessors.

Anna Tabakhova is a French jewelry artist and the author of the book Clasps, 4,000 Years of Fasteners in Jewellery.

Alison Antelman is a metalsmith, educator, and maker of clasps in Berkeley, California.

1 *Clasps: Functional Adornment,* Macchiarini Creative Design Gallery, San Francisco, April 14–June 24, 2018; *Show Your Clasps,* Colorado Center for Metal Arts, Pueblo, Colorado, May 3, 2018.

Michael Boyd
Ruby Necklace, 2017
22 karat yellow gold; 18 karat yellow, red, and white gold; Mozambique agate, natural unheated ruby, sapphires

The following jewelers have created clasps that connect seamlessly. Some are integrated and hidden; some are a main focus of the work. These clasps are related to the long history of innovative claspmaking in a variety of ways.

Suzanne Williams, a jeweler and teacher from Denver, Colorado, says that "people like clever clasps." Williams has explored and researched more than 200 types of latches and connectors, including historical, contemporary, and commercial clasps, which she has developed into categories based around function. Her intense research, along with influences from everyday items including pill-bottle screwtops, garter clips for stockings, and hasp mechanisms, has inspired her to fabricate examples. Her toggle variation appears to be a decorative pendant, leaving one unable to identify where the clasp actually is.

Thea Izzi, a jewelry designer based in Rhode Island, says, "Certain clasps have to be modified for the customer. My responsibility as a designer is to come up with a clasp specific to a customer's needs." Clasp designs—historically or in contemporary jewelry—are infinite. A simple S hook evolves into a circle with a slit in it, mimicking the rest of the elements in Izzi's *Eclipse* necklace, one of many unique clasps incorporated into her original designs. There is a natural flow in her *Fan* necklace. The clasp, a hand-fabricated spiral, is secure and barely noticeable amid the repeated pattern of the forms.

Michael Boyd, a jeweler and lapidary from Pueblo, Colorado, says that for him, creating clasps is "all about the process, the discovery, and being innovative. Art is the end result." His inventive use of connections throughout the fabrication process makes his work cohesive. Boyd pays as much attention to function as to design, and cuts his own stones. Experimentation and play often lead to several new designs, with the clasp a unifying aspect in Boyd's jewelry. In his *Ruby Necklace,* he turns the box clasp perpendicular as an added safety measure; not wanting to use an added latch, he provides this solution to maintain the aesthetic while fulfilling the need for security.

Lissa Queeny Matthews, a model maker and metalsmith from Kingston, New York, says that while "others count sheep at night, I think of mechanisms; it keeps me relaxed." Matthews worked for Van Cleef & Arpels, along with their manufacturer, as a bench jeweler; therefore, she has an intense training in jewelry

Creating clasps is "all about the process, the discovery, and being innovative. Art is the end result."

Above:
Alison Antelman
Mini Metro Bracelet, 2015
oxidized silver, 18 karat and 22 karat gold, rubies, black and white diamonds
6 1/2 × 1/2 × 1/4 in.
Photo: Eric Smith

Left:
Suzanne Williams
Dragonfly Clasp necklace (open and closed), 2007
sterling silver, 18 karat gold, rubellite tourmaline, diamonds, freshwater pearl
2 1/8 × 1 3/4 in.
Photo: Priscilla Montoya

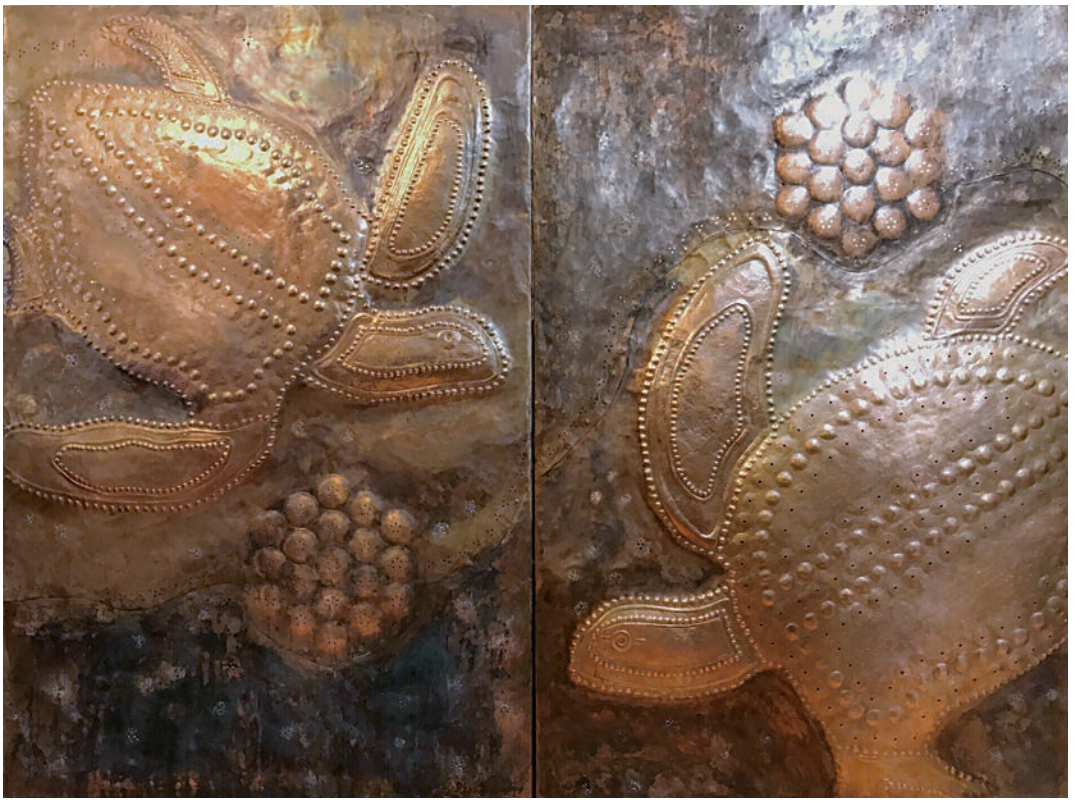
fabrication. She creates moving parts and uses nothing premade. Matthews's desire to create mechanical movements came well before her career. As a child, she hoped for her Thumbelina doll to break in order to disassemble it and discover how it was made. In her own jewelry, Matthews creates a surprise that either stands out or blends in: "It's what I love to do," she says. She often has the clasp figured out well before the rest of the piece.

Ryan Gardner, a jewelry artist from Pueblo, Colorado, simply states: "The clasp is part of the piece." He makes sure the function is not overly complicated, using a simple hook and eye with a stone as an accent, or creating a clasp as the main feature of the work; either way, the viewer is happily surprised upon opening it. *Toggle Variation Necklace* is designed so that the closure stands in the center of the ring and does not slide over. It looks like a simple pendant, when in fact pulling at the stone reveals its function as a front-worn clasp.

Richard Salley, based in Rio Vista, California, was a public-school teacher for thirty-two years before devoting all of his time as a jeweler and teacher of workshops focused on kinetics in design. "The jewelry wouldn't exist without the clasp," he says. For Salley, part of the challenge is invention: figuring out ways of connecting all of the handmade components without any premade components. His prong clasp is a playful approach to hiding the clasp in plain sight. The wearer knows the secret, which is revealed to others only when removed.

Cheryl Swarz, a jeweler and metalsmith from Westcliffe, Colorado, says, "It's nice to know that these clasps have lasted through the years. If there's going to be jewelry, there's a need for a clasp. I'm happy to solve that problem." Her clasps look noticeably similar to those created by Egyptian metalsmiths 3,500 years ago. The Egyptian box-shaped clasp (so called by Egyptologists) is composed of a box and a rectangular-shaped fitted lid, both pierced to allow a pin to pass through, which brings the two pieces into alignment and secures the clasp. When Swarz discovered the similarity of her clasp to those historical predecessors, she "felt an emotional connection to the craftsmen. These things were designed and made by fine artists. When trying to imagine their hands, their tools, their workplace, I got goosebumps."

Peter Antor, a studio artist in Chicago, wants the clasp to blend in and become part of the aesthetic of the piece. He is always looking for solutions to design problems. Antor first used mechanisms in his sculptural pieces, which he then adapted for jewelry. His architecturally designed work, which includes wood, concrete, and precious metal, has a kinetic structure that morphs jewelry and sculpture together. In his *Linear Grid* bracelet, the tension clasp is hidden within the design, masked as a hinge, while the opposite side mirrors it. You can't tell which side is the clasp and which is the hinge.



Turtle Media Screen Doors, 2017
copper and pigment; patinated and lacquered and wrapped over wood and aluminum frames
61 × 82 × 3 in.

TECH TALK

Translating Jewelry Techniques to Larger Scales: Three Examples

BY VICTORIA LANSFORD

WHAT HAPPENS when a metalsmith who typically works on a small scale gets the idea—and a commission—that necessitates working on a huge scale? Which tools do you use? Will the metal behave the same way? How do you etch it, form it, anneal it, saw it—and how far, literally, can you push it?

As a student at the College of the Arts at Georgia State University, constraints on time and money kept my work small, but didn't curb my enthusiasm for the technique of Eastern repoussé. My scale choice repeatedly drew me into an argument with my teacher, artist-in-residence Gia Gogishvili. He would look at my jewelry-sized Eastern repoussé and chasing pieces, heave a long sigh, and say, "Vic-toooohhhhriaaa! Filigree: jewelry. Repoussé: silversmithing." I would shake my head and say, adornment jangling, "But Gia, look at these cool repoussé fish earrings I made!" Gia would roll his eyes and sigh, knowing he'd have the same argument with his stubborn female American student again the next week.

Like me, a handful of other North American artists such as Linda Kindler Priest and John Cogswell also made brooches and small objects from repoussé, but for centuries the technique was primarily used for larger functional objects from North Africa, Europe, and Asia; hence my Tblisi-born teacher's bias. In tourist destinations like Chiang Mai, Thailand, craftsmen can still be seen chasing bowls the size of small bathtubs. Adapting the technique to a jewelry scale became a natural way for me to teach the process to students in a shorter time, making repoussé jewelry hugely popular among metal artists around the world.

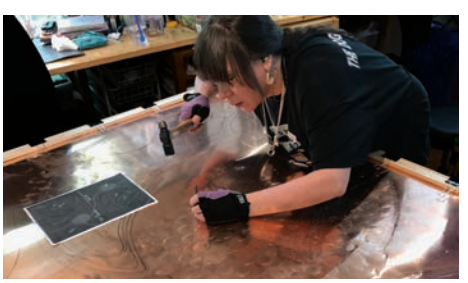
In 2011, I embarked on a series of artist books that combined illumination and calligraphy, with etched or Eastern repoussé copper covers. In 2015, a British company that builds yachts approached me to ask if I could repeat my process in multiples to create a tiled room divider. My enthusiastic "Yes, sure!" brought another question: "Could you also etch single copper panels for double doors that are eighty-two inches wide and sixty-one inches high?" "No," I said, "but I could repoussé them, and trust me, they'd be amazing."

Example One:
Turtle Media Screen Doors for Bespoke Sixty-Nine-Meter Superyacht

I was commissioned to create Eastern repoussé panels that were forged and wrapped around wood and aluminum frames. These were to act as motorized sliding pocket doors to cover the media screen in the lounge of a bespoke sixty-nine-meter superyacht built in Europe. The panels were forged from four sheets of copper riveted together to form the two pocket doors. Per the client's request, the design was rendered in multiple circular textures and then drilled to allow light through. The pigmented and patinated doors were spray-lacquered to protect the finish.

Though I had never seen or done repoussé quite this large, I knew the physics of Eastern repoussé would scale. But I also knew there would be hundreds of logistical details to figure out, such as how to keep the huge sheets of copper stable while I worked, and how to reach the center of the design without breaking my back. However, I was able find the best solutions well ahead of time, and complete the project with relatively few surprises.

Adaptations:
I needed someone with extensive forging/hammering (and etching) experience who would commit to this undertaking. For the final three months of the project, Deanna Pastel, studio director at Creative Side Jewelry Academy in Austin, Texas, commuted to Atlanta to work with me, and matched my energy—key to my meeting the deadline! There was more flat background than I would normally design, so I used 22-gauge copper (instead of 24-gauge) to prevent it from warping. Copper more than three feet wide is available through online architectural suppliers.

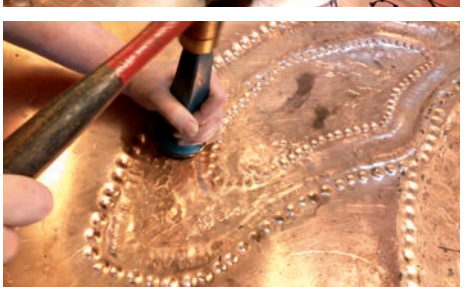


The design called for the panels to be wrapped and permanently screwed to frames supplied by the shipyard. This gave me the idea to use canvas stretchers to stabilize the sheets while in progress. We attached them with bungee cords, large binder clips, and lots of duct tape. Weightlifting gloves and thick, flexible first-aid tape helped absorb the shock to our hands when hammering.

Since I knew annealing wouldn't be possible on the full-scale pieces, I first tested how much relief I could get on the twelve-inch sample section that I created for the client in 2016. Because the 22-gauge copper was dead soft, I could do three very intense rounds of Eastern repoussé without annealing: 1) chasing the outlines and stamping all the larger circles; 2) hammering the relief from the back with all the adaptations of push tools; 3) chasing from the front to create detail around the eyes, the consistent curves of the head, flippers, and shells, and the circular textures of various sizes.

The artist drilling the right-side panel of the screen

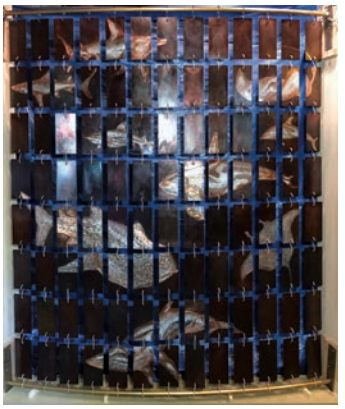
To accommodate the larger size, I adapted or repurposed tools that were already in the studio. To push out larger areas of relief, my large push tool became my edging tool. Mushroom stakes and large Bonny Doon dapping punches became my large push tools. Sometimes I hit the metal directly into the plasticine with a urethane hammer from the back, or planishing hammers from the front.



For the turtles' smaller circle textures, I used nail sets made for sinking nails flush into wood molding from the hardware store. For the larger circles, I purchased punches used for cutting rubber washers, then sanded their edges to be less sharp. These adapted circle stamps worked for all but the largest clusters of domes in the background; those had to be hand chased with the large line tool.

My great-grandfather's anvil became my oversized bench block when chasing lines and stamping circles. We spread slabs of plasticine on top of thick plastic bags so they were easy to slide around under the copper. A large baking sheet made the perfect pitch bowl to support the heads and flippers. The shell was too large and deep for pitch: the amount of pitch required to fill the shells meant it got too cold and kept crumbling. We used mushroom stakes and the large dapping punches to support specific areas of the shell from underneath. To prevent work hardening from flexing or warping while working from the front, we stuffed the relief areas with pillows, and placed inexpensive adjustable tripods under the canvas stretchers' edges for extra support. When we ran out of space in the studio, we took over my screened-in porch and deck.

Shears and power tools left jagged edges, so I used a very balanced and rigid six-inch Knew Concepts Titanium "Birdcage" Saw with the blade at 45 degrees to cut the curves along the riveting seam, then I smoothed the edges with a needle file and a steel burnisher.



Etched Screen, 2017
copper, steel, twine, and pigment; patinated, lacquered, and suspended within a wood, steel, and brass frame
98 × 75 × 12 in.

Example Two:
Etched Copper Room Divider for Bespoke Sixty-Nine-Meter Superyacht

This commissioned piece is located in the main salon on the same vessel. The curve of the screen conforms to the layout of the room, and allows light to filter in between the panels. The bright copper of the raised arcs and the burgundy and blue hues of the patinated background glow in the sun-filled space. The framework, shown at my studio, is completely hidden by columns built into the superyacht, and the screen is lit from above.

Adaptations:
Since this project was composed of smaller sections, the primary considerations were logistical: keeping track of the 104 two-sided, etched panels, each 218mm by 105mm, that form the forward and aft side pictures; assembly-lining the steps for efficiency; and using larger equipment to save time and joint fatigue.

The leverage power of a guillotine bench shear made cutting the 20-gauge copper much easier.

To punch the 208 holes for the twine-wrapped S hooks, I made a brass sheet template to fit in a disc cutter so that the copper panels instantly lined up with the correct hole each time. Instead of a hammer, I used an Electric Bonny Doon Hydraulic Press, fitted with the adapter punch for a Swanstrom Disc Cutter. The holes' size and exact placement were key to making the panels hang rigidly in the curved formation.

After hand-scrubbing twelve panels, I discovered the best way to clean them was in my dishwasher. The client loved the "pull" texture that comes with non-agitated ferric chloride etching. We used Press-N-Peel, laser-printed with the design, then we handpainted all the meticulous detail with Dr. Martin's India Ink.

To keep track of the two-sided design, and to maintain the exact 30mm spaces it spanned, I cut a chipboard template to hold six panels and laid it on a thick sheet of clear Plexiglas. Before transferring the next portion of the design, we lifted up the plexi to look at the underside and double-check that its design matched correctly. The panels with blank backgrounds could be etched on both sides at once. Most panels, however, had to be prepped, masked on the blank sides, and etched on one side, then prepped on the second side, masked on the first side, and etched on the second side.

Graphic artist Uduak Ita managed the huge digital files for the project. Though she is not a metalsmith, her painting skills proved invaluable as she helped to prep the panels, apply the white wax-based pigment, and polish the raised areas. It took twice as long to prep the panels as it did to etch them, so we doubled up prepping and polishing panels when it was too late at night to hammer on the *Turtle Doors*. My son, Skyler, masked the backs of the non-etching sides in the wee hours so we'd be ready to etch them in the morning. Electrical tape (around the edges) and outdoor-sign vinyl made the perfect masking film. I built an outdoor etching station for extra space and safety. A folding table held more etching trays. Twelve panels proved to be the most efficient number of panels to prep or etch at one time.

Example Three:
Giving Voice, Mokume Gane and Eastern Repoussé Front Cover

Giving Voice is my six-year, multidisciplinary magnum opus. It's both a printed book and an interactive ebook that I created about the connections we form and how they can dramatically change our paths, featuring my illuminated hand-lettered artwork, animations by Steve Walker, jazz by Roddy

Eastern Repoussé: What's the Difference?

In metalsmithing, the term "repoussé" means to strike sheet metal freehand from the back with punches to create a bas relief. The term "chasing" means to strike from the front to countersink, refine repoussé, or create incised decoration. Eastern repoussé is a specific technical process, not merely a style. It offers the unique ability to create multiple defined levels of relief at any desired height and in any design style (within the laws of physics and metallurgy).

Repoussé work features a matrix (or background) of metal around the repoussé area, except when working on cuff bracelets or rings. Each traditionally shaped Eastern repoussé tool has a specific purpose, and the line tools are far less sharp than their "Western" counterparts. The oval push tools are used to create relief. One of these is the edging tool, the secret weapon for achieving greater depth. The round planishing tools are used for refining relief from the front. The tools must always strike the metal perpendicular to the surface, no matter how the curvature of the metal changes, and must be held just above the necks. The lower you hold the

Eastern Repoussé tools

Giving Voice, 2018. Shibuichi, copper, sterling. 11.25 × 7.25 × 2 in.

Noll, and an introduction from best-selling author and artist Nick Bantock.

One of my specializations is patterning mokume gane metal through the process of Eastern repoussé, so adding it to my illuminated book series' covers seemed a natural progression. Mokume gane is a centuries-old Japanese technique of fusing different layers of non-ferrous metals to create a single sheet, then displacing them through carving or hammering, and finally grinding down the surface of the metal to reveal the cross section of all those different layers within the sheet. Chemical patinas deepen the alloys' colors to highlight their contrast.

Adaptations:
One of my favorite tools for larger Eastern repoussé projects is the ball side of a chasing hammer. I use it directly on the metal in place of the large push tool. It leaves the relief a little lumpy, so to smooth it out, I go over the marks with a planishing hammer.

If you have a urethane-filled containment box large enough, you can use a hydraulic press fitted with domes or dapping punches to do the initial overall relief instead of hammering it. The larger the sheet of metal, the more height you can get, and more height offers more levels of relief. I hammered the entire piece up to the level of the background behind the sun rays. After relining the sun over pitch from the front, I could see it from the back to push it out further. Once the sun had enough height, I relined the letters and pushed them even further so they appear to sit on top of the sun rays.

Normally, I planish Eastern repoussé to the point of obsession. For *Giving Voice,* I opted to reveal the mokume on the sun, but leave the top layer of shibuichi (an alloy of 95 percent copper and 5 percent silver) on the lettering and the background. I keep a large blob of pitch on top of my pitch bowl instead of leaving it flat. The blob supports the metal well above the lip of the bowl. This allows better access for chasing near the edges. The mound on my eight-inch pitch bowl could accommodate more than half of *Giving Voice*'s cover at a time.

Scale Up and Experiment!
Blurring the lines between goldsmithing and silversmithing techniques when creating both jewelry and functional objects allows me to do with metal what fusion cuisine does with food. Metalsmiths tend to see a thousand possibilities in any tool, and have a knack for scheming and creative problem solving. Whether scaling your processes up to book size or wall size, your ability to adapt, encourage others, and experiment are your best assets in the studio.

Victoria Lansford's award-winning artwork ranges in scale from wearable art jewelry to architectural metal installations for one of the world's largest superyachts. Her instructional video series Metal Techniques of Bronze Age Masters *has generated an international revival of ancient metalsmithing processes around the world.* https://victorialansford.com

Further Resources:
For more, including additional process and detail shots and an animation of the Eastern repoussé and mokume gane book cover, visit https://www.snagmetalsmith.org/metalsmith-magazine/metalsmith-extra/

tool, the more control you have over where it hits your work. The areas to be "pushed out," as well as most interior design lines, are first lightly delineated from the front with the large line tool over a steel bench block. The resulting echo marks on the back indicate where the relief will be. The exterior is relined each time after hammering from the back in order to keep the background metal consistent.

Plasticine, pitch, and bench blocks are all used to support the metal at different points in the process. Using plasticine (non-hardening modeling clay) when hammering from the back allows the metal to expand into much higher relief. In antiquity, smiths used clay for this step. Supporting the metal with pitch gives more resistance when refining relief from the front, which allows for greater detail and also keeps the relief from caving back in on itself, while still allowing some countersinking if desired.

Eastern repoussé is almost always done on 24-gauge, non-ferrous sheet. This thinner metal gives beautifully and allows crisp detail. (It's also easier on the smith's joints.) When the background on a larger work must be thicker, 22-gauge sheet will work. Typically, Eastern repoussé is done on sterling, copper, or 18k gold. (Fine silver in any gauge lacks the resistance needed to maintain details while working.) Working in 24-gauge sheet makes using harder alloys like sterling possible, which allows for stronger finished pieces. I've learned that the most visually appealing ways to make the finished edges look thicker are to fold the outside edge under or solder a wire rim around a piece before it is sawed out. Also, tacking the wire rim to the edge of the repoussé with a micro-TIG welder first makes soldering it easy.

TECH TEACH

Utilizing Digital Processes for Layout and Design Transfer

BY FRANKIE FLOOD

It can be daunting even for seasoned metalsmiths to make that first center punch mark or cut into the precious materials that we work with. The challenge of transferring a design from an initial sketch to metal is the focus of this first article in a series focused on the integration of digital and traditional techniques intended to serve as an entry point for learning about tools that any metalsmith can not only use to increase accuracy and productivity, but also incorporate into their larger practice. I have found that the integration of digital tools for design transfer to metal helps my students hone and clarify their design intent, and these skills can likewise help any artist expand and grow.

Building on Transfer Traditions

Many metalsmiths begin an object by creating a final rendering of a completed piece, from which they can create full-scale working drawings or orthographic plan drawings for taking measurements and creating templates for cutting components. These scale drawings are then used to transcribe the design to metal for guidelines as the object is cut and formed. This layout consists of marking the sheet metal so that the flat shape, or pattern, or part is indicated for cutting (drilling, sawing, piercing), bending or forming operations, and etching.

Traditionally, metalsmiths have used techniques including scribe transfer, direct transfer, and adhesive transfer.

- ***Scribe Transfer*** refers to the use of a black permanent marker or layout fluid (such as Dykem Blue) to thoroughly cover the surface of the sheet of metal, after which a scribe is used to carefully scratch though the coated surface to make a thin clear line. Drafting tools such as steel rulers, dividers, calipers, and templates help obtain the desired shapes.
- ***Direct Transfer*** refers to the process of cleaning the surface of the metal with soap and water, painting on a thin coat of water-based white paint, and when dry, using carbon paper to trace over the design with a ballpoint pen or a hard leaded pencil.
- ***Adhesion Transfer*** is the process of applying a coating of adhesive (rubber cement or spray adhesive) to the back of the pattern, placing the pattern into position on the metal, and using a burnisher to rub it down before cutting, drilling, or forming.

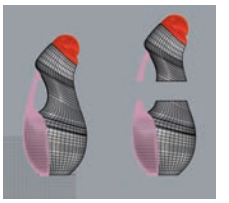
Taking the Plunge into Digital

Transposing a drawing to metal accurately—whether for a simple piece or an intricate one—allows the original design intent to be best realized, and integrating digital drawing skills is an evolution of traditional methods. A rough sketch can be photographed on your phone and then "imported" into a CAD (computer-aided design) modeling program. This .jpg image can then be used as a background template over which you can create a vector-based drawing. This drawing can then be copied, pasted, and scaled to suit your needs within any modeling software. Various output methods—from those as simple as an inkjet or laser printer that prints onto a sheet of paper to those as complex as a 3D printer that prints onto metal—translate the digital model to your material.

Learning a program's basic features will unlock some of its potential. That said, a user does not need to learn every aspect of a given software in order to integrate it into their workflow. Many CAD programs can be used by the novice, despite the fact that they are capable of much more. There are more options than ever before for learning software via online tutorials, and there are also several open-source and cost-effective CAD programs available.

The integration of digital tools for design transfer to metal helps my students hone and clarify their design intent, and these skills can likewise help any artist expand and grow.

Casey Newberg
Birth pitcher, 2018
chrome-plated electroformed copper, PLA, automotive paint
7 × 5 1/2 × 15 in.
Photo: Casey Newberg



3D CAD model for 3D printing parts (Casey Newberg *Birth* pitcher process)

electroformed 3D print (Casey Newberg *Birth* pitcher process)

RECOMMENDED SOFTWARE

Rhino 3D
(https://www.rhino3d.com/)

ADVANTAGES:

- The cost allows you to own the software until a new (major update) version comes out, at which time you can upgrade for a reduced price. Several years between updates has been the norm.
- There are many software modules called plug-ins that extend the potential of Rhino, some of which—but not all—are free. RhinoGold is a pay-for-use plug-in that is specific to jewelers, as is RhinoCAM, which allows users to create CAM toolpaths for CNC machining. Grasshopper is a free plug-in that allows for algorithmic modeling.
- Large network of users with plenty of tutorials.

DISADVANTAGES:

- Learning curve can be steep due to all of the commands and features.

TinkerCAD
(https://www.tinkercad.com/)

ADVANTAGES:

- Free open-source, browser-based software.
- Shallow learning curve due to use of primitive shapes for 3D modeling.
- Large network of users with plenty of tutorials.

DISADVANTAGES:

- Basic interface does not allow for more advanced modeling features that other CAD software packages contain.
- Primarily intended for entry-level users who want to create 3D-printable forms.

Inkscape
(https://inkscape.org/)

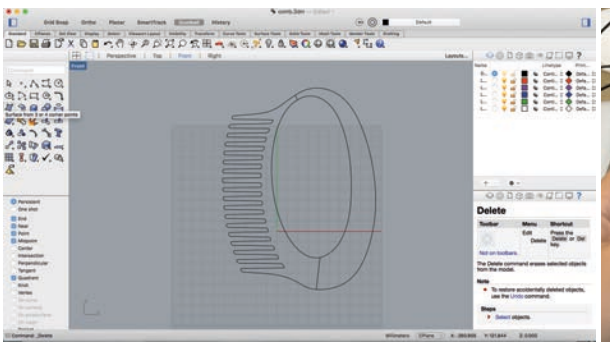
ADVANTAGES:

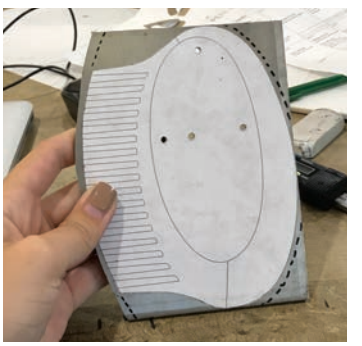
- Free open-source software that is comparable to Illustrator.

DISADVANTAGES:

- 2D-based drawing only; does not allow for 3D drawing once your experience level increases.

Casey Newberg
Recurrent comb, 2018
aluminum, jarrah
4 3/10 × 1 × 7 in.
Photo: Phil Renato





Left:
CAD as layout tool (Casey Newberg *Recurrent* comb process)

Right:
CAD layout used for sawing template (Casey Newberg *Recurrent* comb process)

Some of the benefits include greater accuracy, registration of design layers, and repeatability in creating multiples. Most CAD modeling software allows for tolerances greater than .0001—useful to metalsmiths working with complex assemblies of parts that require close tolerances. The fact that a design layout can be repeated over and over with the same accuracy by an output device such as a inkjet or laser printer, vinyl cutter, laser cutter, or other CNC (computer numerical control) device makes the integration of digital processes a real plus for metalsmiths working with multiples.

Potential Uses of Digital Layout When Combined with Traditional Metalsmithing Processes: Layout for Sawing

All CAD software is capable of generating scale drawings that can be printed on a traditional inkjet or laser printer. These printed layouts can be applied via adhesion transfer to create accurate layouts for center-punching complex hole patterns and for sawing and piercing.

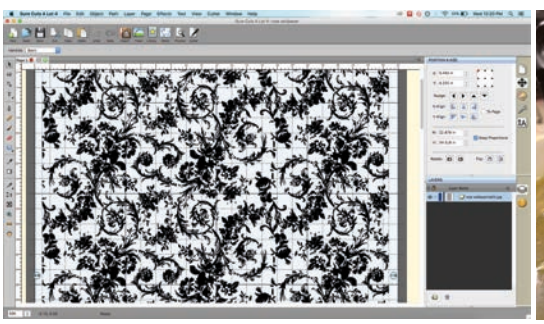
All CAD software is capable of generating scale drawings that can be printed on a traditional inkjet or laser printer.

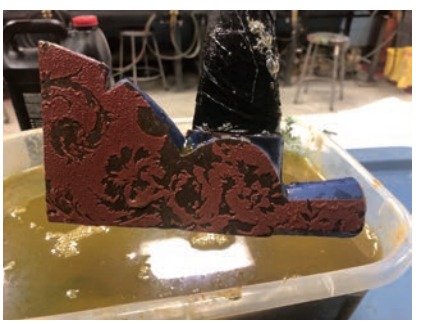
Layout and Resist for Chemical Etching Processes

CAD vector-based drawings can be combined with vinyl-cutting machines to create "stickers" that can be useful as etching resists. Detail is sometimes limited based on the scale of the design, but most vinyl cutters are capable of very fine detail. Vinyl cutters are very affordable and usually include software that can also be used for creating drawings straight out of the box. These vinyl stickers can also be used as a form of adhesion transfer for sawing. The negative/positive output allows the user to plan what parts of the design will be removed during the "weeding" process before executing the design in metal.

Laser Cutting and Etching

CAD vector-based drawings can be combined with a laser cutter to create layouts for sawing, drilling, or etching. Even low-powered laser cutters (lasers not meant for cutting metal) can burn away or mark coatings that have been applied to metal. A digital design for traditional chemical or electro-etching can be prepared by spraypainting metal to serve as the resist. The laser is then used to "burn away" areas that will later be chemically etched. Most laser





cutters have preset settings for etching painted brass. Traditional asphaltum grounds may also be used, as the laser will "burn" through the resist but not impact the metal. The accuracy of the laser allows for detail that rivals that of PnP etching paper. Most low-powered lasers also have settings for etching glass (enamel) as well as anodized aluminum, if you decide to use your digital layout as a final surface-marking technique. The laser can also mark through layout fluid as a scribe transfer technique. The result will be lighter than scribing but can create a quick and accurate layout for marking holes and sawing. Vector drawings could also be combined with high-powered lasers for cutting metal, and for creating multiples via vendors that own these expensive machines and who specialize in laser-cutting metal. Having a vector drawing that most shops use with their industrial equipment will allow you to receive an accurate quote for your project.

CNC Machining Processes

The vector-based drawings that CAD software creates can be combined with a CNC mill or CNC lathe to create CAM (Computer Aided Manufacturing) toolpaths for cutting parts from sheet, plate, round, or square stock. 2D CAM toolpaths are created from the vector drawing and operations such as face milling, drilling, pocketing, and profiling use end mills and tool bits to subtractively carve your design in metal. If a few more

Top:
Travis Donovan
Hatchet (Rococo Floral), 2019
tool steel, wood
13 × 6 × 1 in.
Photo:
Travis Donovan

Bottom left:
design for vinyl cutting (Travis Donovan Hatchet (*Rococo Floral*) process)

Bottom right:
vinyl used as an etching resist (Travis Donovan Hatchet (*Rococo Floral*) process)

RECOMMENDED SOFTWARE

Autodesk Fusion 360
(https://www.autodesk.com/products/fusion-360/overview)

ADVANTAGES:
- Large network of users with plenty of tutorials.
- User-friendly interface with multiple modes of modeling/drawing.
- Integrates some of the best software tools into one software package.
- Included CAM toolpath generation software for free.
- Powerful, full-featured modeling software for an amazing price.

DISADVANTAGES:
- Frequent updates that require you to update on a regular basis.

Sure Cuts A Lot
(http://surecutsalot.com/index.php)

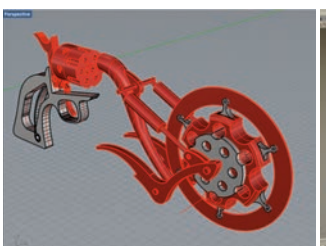
ADVANTAGES:
- Cost of software allows you to own the software until a new (major update) version.
- Packaged with most vinyl cutters (included with the price of the vinyl cutter).
- Shallow learning curve.
- Has a basic autotrace feature for creating vector graphics from photos.

DISADVANTAGES:
- 2D-based drawing only; does not allow for 3D drawing once your experience level increases.
- Primarily intended for use specifically with vinyl cutters.

Adobe Illustrator
(https://www.adobe.com/products/illustrator.html)

ADVANTAGES:
- Large network of users with plenty of tutorials.

DISADVANTAGES:
- Subscription-based system.
- 2D-based drawing only; does not allow for 3D drawing once your experience level increases.



3D CAD models for CNC cutting
(Frankie Flood *Peacemaker/Piecemaker* pizza cutter process)

final CNC machined parts
(Frankie Flood *Peacemaker/Piecemaker* pizza cutter process)

steps are taken beyond that of creating the basic 2D-based vector drawing, and expanded into 3D modeling techniques (such as extrusions and lofts), then 3D CAM toolpaths can be generated for subtractively roughing and finishing 3D metal objects.

3D Printing for Mold Making

The basic vector drawing can be expanded upon via 3D modeling (similar to the aforementioned 3D CNC machining processes). A 3D printer can then be used to create a printed object in plastic or in wax-based resins and then used as a "lost wax" pattern for casting or electroforming. Desktop FDM 3D printers are now available for under $250, and resin-based DLP 3D printers are now available for under $550. FDM printers typically print in plastic, and detail for ring-sized objects is limited, but DLP and SLA printers use resin and have a much higher resolution, capable of ring-scale detail. In addition, the model can be printed by a vendor that utilizes more expensive metal printing processes. Using 3D printing allows for unlimited complexity of form that would normally cost more if using traditional machining processes that require fixturing.

Frankie Flood is an Associate Professor and Area Head of the Metalsmithing and Jewelry Design area at Appalachian State University in Boone, North Carolina.

Above, top: Frankie Flood, *Peacemaker/Piecemaker pizza cutter*, 2016
aluminum, stainless steel, steel, zinc, brass, ball bearings
6 × 14 × 3 in.
Photo: Frankie Flood

SKETCHBOOK TO DIGITAL FILE

Import the photo to CAD software and scale

Almost every CAD software program has the option to import a photo (.jpg) to be used as a background that can be "traced" over. Scale the image using the ruler in the photograph, if you want to preserve the scale of your sketchbook drawing. All CAD software will have specific units; make sure to select the units you want the final image to be exported to on your specific digital output device.

Vector drawing using CAD software

A photograph of the sketch can be drawn over and translated into a vector drawing by using the vector-based paths (points, lines, arcs, circles, squares, ellipses) that CAD software uses to define a 2D drawing.

Autotrace

Some CAD software has a "tracing" option that autotraces the photograph. This works well with black-and-white photographs and high-contrast images. The photograph can be manipulated via photo editing software to increase threshold or contrast to aid in this process. Adobe Illustrator contains a command called LiveTrace that autotraces an image; the LiveTrace or autotrace processes usually results in a less accurate tracing or "messy" path. That said, for the novice this method offers fast results and helps overcome the frustration of learning how to manually trace a drawing.

traced design in CAD software
(Frankie Flood *Peacemaker/Piecemaker* pizza cutter process)

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